

# MINING WORLD



MINING, SURVEY  
DIRECTOR, NUMBER

APRIL 15, 19

HERE IS THE

# Solution

TO YOUR  
PUMPING PROBLEM

**Except** the impeller and the engine-side shell half-liner (changeable Maximix Rubber parts), Hydroseal and Centriseal Slurry Pumps are identical, and in five sizes. The Hydroseals provide maximum head, and can be used in series. Centriseals, operating without sealing water, deliver the pulp undiluted.

## Slurry

400 to 8  
mesh

**HYDROSEAL**



**CENTRISEAL**  
(NO SEALING WATER)

## Sand

35 to 4 mesh

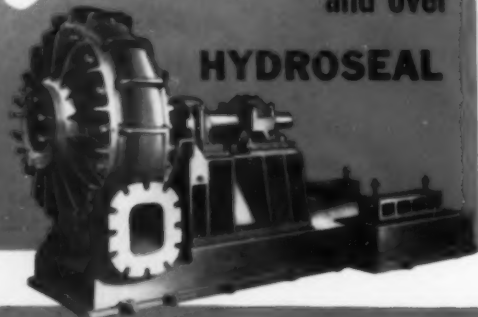
**HYDROSEAL**



## Dredge

3 mesh  
and over

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In the interest of more efficiency and economy in your pumping, write us for detailed information about these superior pumps, and the benefit of our world-wide experience with installations.

**THE ALLEN-SHERMAN-HOFF PUMP CO.**

Dept. J—259 E. Lancaster Ave., Wynnewood, Pa.

*Representatives throughout the World*

# HYDROSEAL and CENTRISEAL

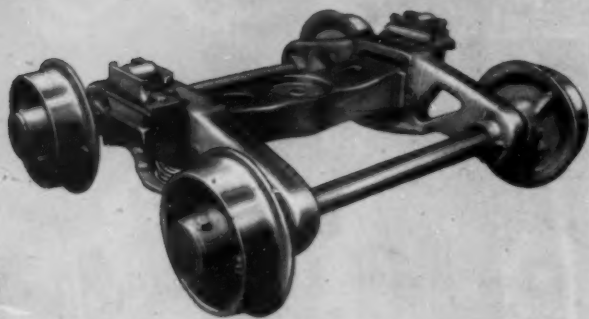
SAND, SLURRY & DREDGE PUMPS

MAXIMIX RUBBER PROTECTED

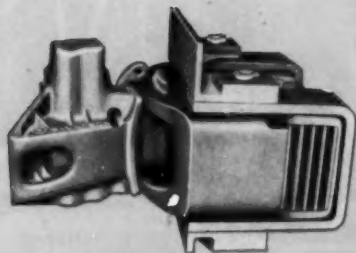


# NATIONAL equipment cuts per-ton costs

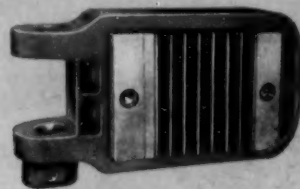
**NC-1 MINE CAR TRUCK** is the latest example of National's pioneering in better equipment. Among NC-1 truck advantages are longer and softer ride springs, friction damping mechanism that controls vertical and transverse oscillations, automatic frame alignment and cast one-piece bolster with large lubricated center bearing. A-985



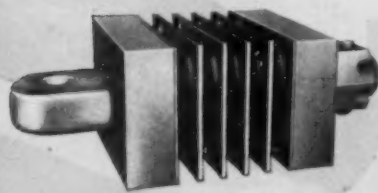
**WILLISON AUTOMATIC COUPLERS** save time with maximum safety, couple at either end of car or locomotive, require no manual assistance, eliminate damaging slack, permit high speeds with maximum stability.



**NATIONAL MI-235 Rubber-Cushioned Draft Gear** primarily used in Willison spherical-horn coupler assemblies for drop-bottom cars and locomotives; are effective with link and pin bumpers and in strap yokes.



**NATIONAL MI-225 Rubber-Cushioned Draft Gear** for locomotives and large capacity cars not required to operate through rotary dump. Give maximum impact protection in minimum space.



**NATIONAL MI-230 Rubber-Cushioned Draft Gear** for cars in rotary dump service. High-capacity rubber pads with soft initial action provide maximum impact protection, lengthen equipment life. Available in capacities and designs to fit individual requirements.



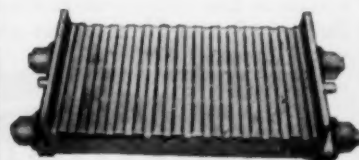
**NACO STEEL WHEELS**, made from quality-controlled Naco cast steel—of high yield point, great tensile strength and ductility—reduce tread spalling or flange breaking. Available in all sizes regularly used in mining or industrial operations.



NACO STEEL SWIVEL HITCHING AND LINK



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## NATIONAL MALLEABLE AND STEEL CASTINGS

Technical Center



*"Progress through Research"*

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## Thermoid Hose designed specifically for use in mines

Thermoid designs and manufactures many types of hose built to give longer service and lower operating costs in a wide variety of specific applications. These 3 are ideal for rugged mining work:

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**THERMINE**

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**#325 SUCTION HOSE**



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*Western Co.*

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WORLD MINING

Vol. 17

# MINING WORLD

APRIL 15, 1955

No. 5

## Catalog Survey and Directory Number

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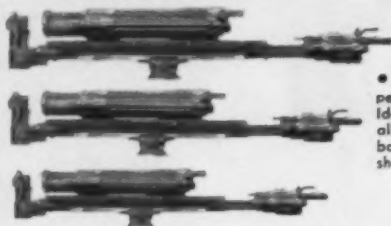
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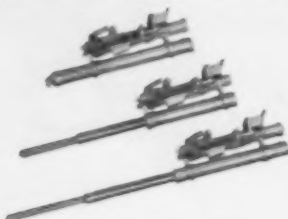
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• Power-feed drifters. Dependable, powerful, and fast. Ideal for columns and jumbos alike. 3 sizes up to 4-inch bore. Also aluminum guide shells to 60-inch change.



• Stoppers for every need — 75-lb., 90-lb., and 120-lb. sizes, and a complete line of offset stopers with 36-inch steel changes for deep holes, or with short feeds for confined spaces. Conventional or telescopic feeds.



• A complete line of sinkers from 18 to 80 lbs. including the popular 45-lb. H10, and 55-lb. H111.



• A complete line of Jumbos, some with air-motor powered, self-leveling booms for quicker set-ups, greater safety, faster rounds.



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• Air-feed sinkers — 2-way feed, 2 sizes. They take the back-breaking work out of drilling horizontal holes, lighten the load on your miners, and increase tonnages.



• The SDR 34 shaft sinker for faster shaft sinking. Available with two or four drills. All adjustments quickly made with air motor.

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... and there's a size and type for every drilling operation in a mine

We've been designing and building rock drills for the mining industry since 1906. During this time we've pioneered many firsts — and during this time, you have taught us a great deal about your drilling problems.

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Why? Because drilling speed, powerful rotation, and dependable durability are inherent in all Cleveland tools. Moreover, operators generally like them because they're easier to run.

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**TWELVE YEAR TD-14 PERFORMANCE RECORD** prompts Acme to put 2 new TD-14As on expanded operations. Here one of new tractors dozes blasted limestone for shovel loading into haul trucks far below surface.



## "We Worked Our TD-14 12 Years Before Trading" Says E. H. Warren, superintendent of Acme Limestone Company's underground mine

The Acme Limestone Company, Fort Spring, West Virginia, got the low-down on durability and performance of INTERNATIONAL crawlers by working a TD-14 for 12 years piling up blasted limestone for a shovel in its underground mine.

With Acme expanding operations, this ancient crawler that took the pounding on the roughest, toughest assignment imaginable has now been replaced by two INTERNATIONAL TD-14As and dozers. They produce approximately 150 tons hourly from

a 21-foot seam of high calcium limestone.

Superintendent E. H. Warren says, "We have been 100% INTERNATIONAL on crawlers since 1942 with our first TD-14 working 12 years before being traded. The all-around production and service we get from INTERNATIONALS speaks for itself when we buy more as replacements."

For a long-term, dividend-producing investment in pit or quarry crawler tractor power, see your International Industrial Power Distributor. He'll demonstrate any of the seven INTERNATIONAL crawlers equipped to do your work. Then you can see for yourself how these machines pay off with peak production in handling rock, gravel or sand at less cost.

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INDUSTRIAL POWER

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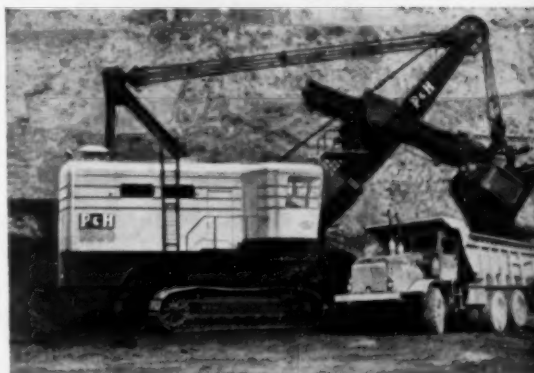
**P&H**

## Electronic Control

Step into the new "production office" of the P&H Model Electric Shovels. Look at the control station. Can you imagine anything simpler?

What you can't imagine is the difference it makes with all operating motions electronically controlled. Response is faster, performance characteristics are improved. There's better co-ordination for the operator — and a total absence of physical effort. The new advantages made possible with complete electronic control account for up to 10% more production. And that means lower tonnage costs, of course.

P&H Electronic Control is dependable, thoroughly proved in the field. It now becomes standard on all P&H Electric Shovels — another example of the way P&H leads the field in Electric Shovel developments.



P&H Model 1800 Electric Shovel — 8 cubic yard machine

**P&H** ELECTRIC SHOVEL DIVISION

**HARNISCHFEGER CORPORATION**  
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TRUCK CRANES



DIESEL ENGINES



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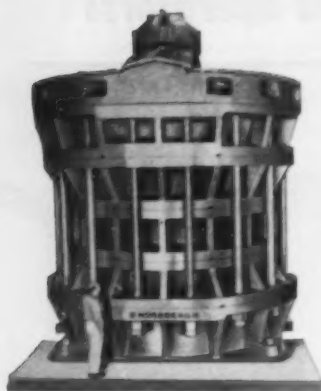
SOIL STABILIZERS



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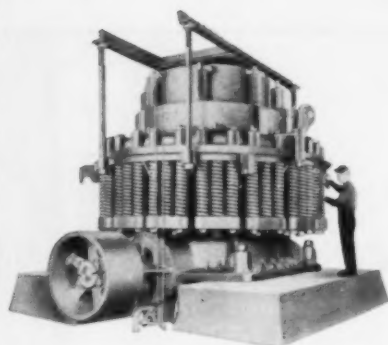


OVERHEAD CRANES



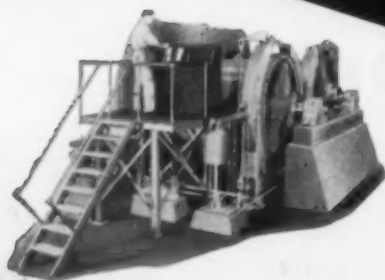
■ **SYMONS® PRIMARY GYRATORY CRUSHERS...** Built in sizes from 30" to 72" feed openings to meet any desired production operation.

■ **SYMONS CONE CRUSHERS...** The machines that revolutionized crushing practice. Built in sizes from 22" to 7' diameter heads with a wide range of capacity.

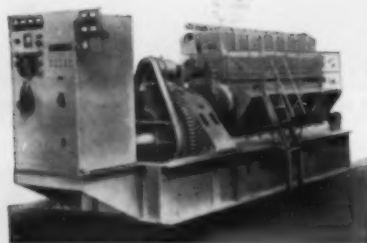


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## for the MINING INDUSTRY



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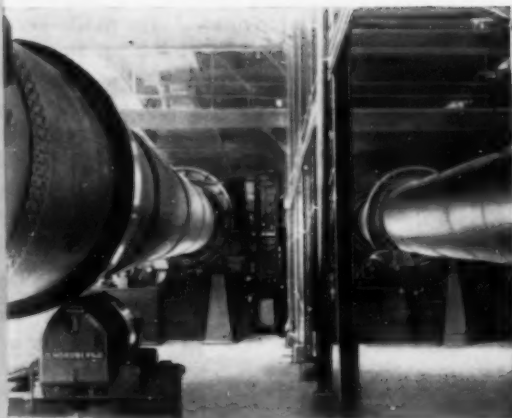
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Nordberg Machinery assures maximum and continuous production at low operating and maintenance cost. For full details, write for literature on the machinery you need.

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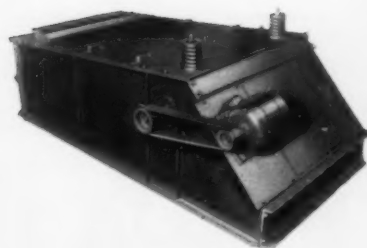
■ **NORDBERG GRINDING MILLS** . . . Ball, tube, rod and compartment types for wet or dry, open or closed circuit operation.

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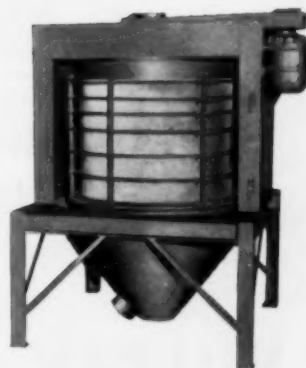
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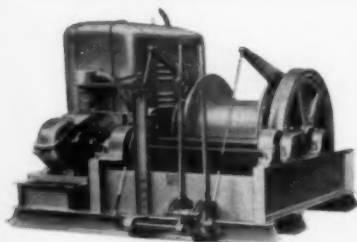
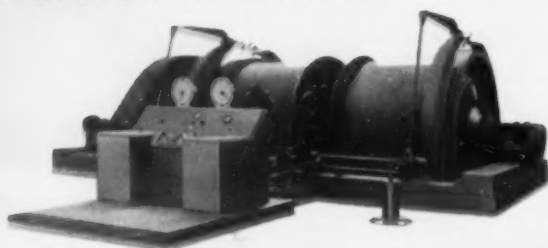
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TRADEMARK KNOWN  
THROUGHOUT THE WORLD



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**HEAVY DUTY**  
mining equipment...get

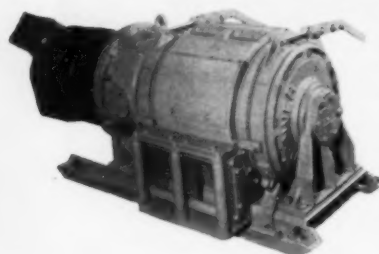
**VULCAN-  
DENVER**

**HOISTS 10 to 1,500 H.P.**



**SLUSHER  
HOISTS**

**15 to 150 H.P.**

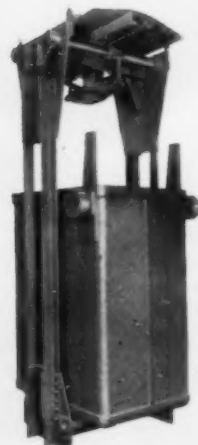


**ALUMINUM  
CAGES AND SKIPS**

**VULCAN IRON  
WORKS CO.**



1423 STOUT ST., DENVER, COLORADO





"AROUND THE CLOCK" IN ROCK . . .



# MARION 111-M

## MINES ZINC IN CANADA

Three shift work, 7 days a week, is the schedule of this all-electric MARION 111-M. Its 4 cu. yd. dipper gets no rest, for big production is needed at this zinc mine in Canada. Another MARION 111-M on the same operation handles the tremendous waste yardage involved.

The strength, the power and the speed of the MARION 111-M, either as a diesel shovel with electric swing or as an all-electric machine, give this machine a bright future in mining.

Get the complete story on the MARION 111-M and what it can do in your open pits.



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A Subsidiary of Merritt-Chapman & Scott Corporation



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in your office*

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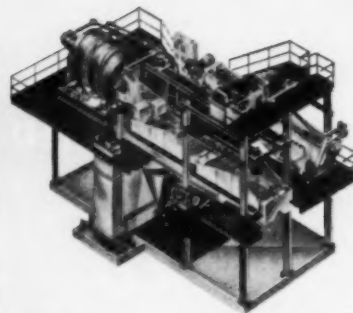
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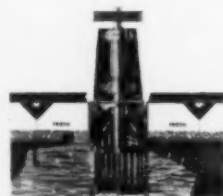
REPRESENTATIVES IN PRINCIPAL CITIES OF THE UNITED STATES AND CANADA AND IN MAJOR COUNTRIES THROUGHOUT THE WORLD



HMS Equipment — Wemco Mobil-Mills, Separatory Vessels, Densifiers, Medium Pumps and Thickeners



Wemco S-H Classifiers, Coal Spirals and Dewatering Spirals



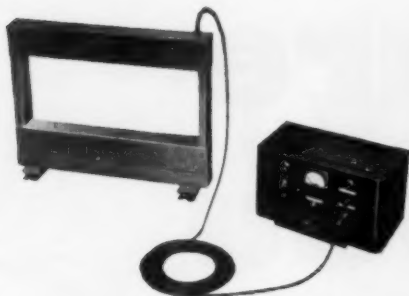
Wemco Fagergren Flotation Machines for selective and rougher circuits



Wemco Torque-Flow Solids Pumps and Sand, Diaphragm and Vertical Pumps

**ADDITIONAL EQUIPMENT AND SERVICES**

- Thickeners and Hydroseparators
- Conditioners and Agitators
- Attrition Machines
- Laboratory Units — Flotation, HMS, etc.
- Laboratory Testing Services



### NEW DINGS METAL DETECTOR

Now . . . a positive, low-cost method for protecting valuable processing machinery against tramp metal damage. This simple, easily installed Detector will detect the presence of all magnetic metals—as well as weakly magnetics such as manganese—even in extremely deep burdens. Completely self-contained, with 30 feet of cable for remote control.



### DINGS RECTANGULAR SUSPENDED MAGNET

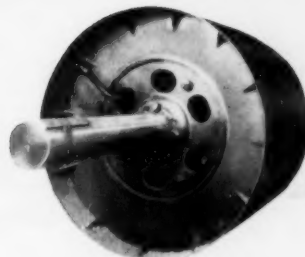
For pulling iron from fastest belts, deepest burdens, here's the mightiest member of Dings force—RM models available to pull iron through 30 inch air gap. New Dings RM uses less current, weighs less in proportion to strength—Compact design takes less room, dissipates heat faster.

**Remove Tramp Iron and Reduce Processing Costs  
with these 4 efficient DINGS PRODUCTS**



### DINGS WET DRUM SEPARATORS

For maximum efficiency and economy in all classes of heavy-media separation and direct concentration service, Dings offers a full line of wet drum magnetic separators to meet your specific requirements. Backed by over 50 years of specialized experience and proved performance.



### DINGS MAGNETIC PULLEYS

Powerful, air cooled electro magnetic pulleys are ideal for conveyor belts with heavy burdens. Installed as head drive pulley, tramp iron is discharged automatically. Low operating cost, long life and maximum range characterize this workhorse of the Dings line.

Dings non-electric, self-energized Perma Pulley magnets are recommended where burden depths do not exceed 3".



# Dings

**DINGS MAGNETIC SEPARATOR CO.**  
4719 W. Electric Ave., Milwaukee 46, Wis.

MAIL  
THIS  
COUPON  
TODAY

DINGS MAGNETIC SEPARATOR CO.  
4719 W. Electric Ave., Milwaukee 46, Wis.

Send me full information covering:

- |                                     |  |
|-------------------------------------|--|
| <input type="checkbox"/> RM Magnets | <input type="checkbox"/> Wet Drum Separators |
| <input type="checkbox"/> Pulleys    | <input type="checkbox"/> Metal Detectors     |

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

GM155

# are you up to date...

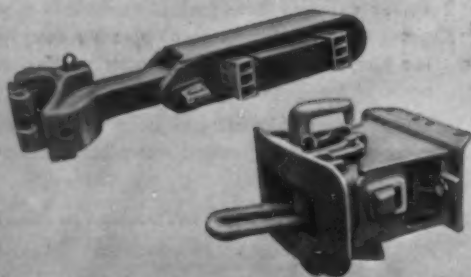


## *It Takes Experience —*

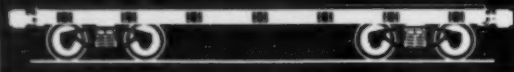
... Engineering Skill and World-Wide Facilities to solve your particular mining transportation problems.

The Gregg Company has specialized for more than a half-century in designing and building mine cars for export.

MODERN DESIGN • RUGGED CONSTRUCTION



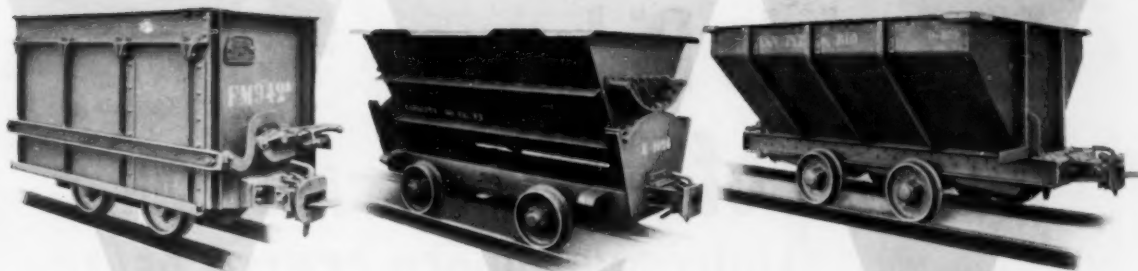
# GREGG



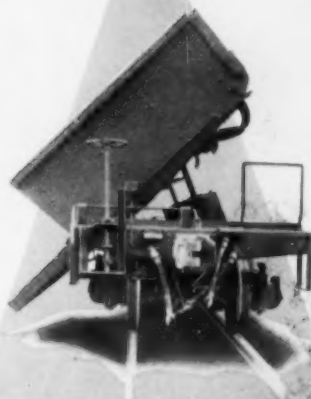
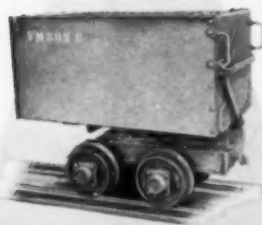
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THE  
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COMPANY, LTD.





# on your mining car needs



• HIGHEST QUALITY • PROMPT DELIVERY

Spare Parts such as wheels and axles, automatic couplers, springs, etc. supplied promptly to suit your equipment.

**Representatives  
Throughout The World.**

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**Cable Address: "Greggcar".**

**THE GREGG COMPANY, LTD.  
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**Gentlemen:**

Please send us your informative, illustrated 56-page booklet describing various types of cars recently built by Gregg.

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FIRM \_\_\_\_\_

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Clip coupon and attach to letterhead.



# Materials Ride Instead of Slide...ON AMERICAN LIGHTNING RIBBED CENTER BELTS



Even on 22° inclines the molded treads of this Lightning Ribbed Center Belt grip and hold wet, slippery materials...clay is no problem.

You deliver **more tons per hour** than with any other belt construction known...can use higher speeds, get longer life from Lightning Ribbed Center Belts.

## LOOK AT THESE RECORDS

30,000,000 tons in South America

21,000,000 tons in Nevada

28,000,000 tons in California

When ribs finally wear off, you still have all the life of a regular flat belt.

## AN AMERICAN FIRST

American Rubber was the first to design and manufacture a successful ribbed center belt. For your needs, contact us NOW.

AR-38

First patented in 1907...  
constantly improved ever  
since.



Factory & General Offices: 1145 Park Avenue • Oakland 8, California • Phone OLYmpic 2-0800  
SEATTLE • PORTLAND • SAN FRANCISCO • LOS ANGELES • BOISE • ST. LOUIS • SALT LAKE CITY

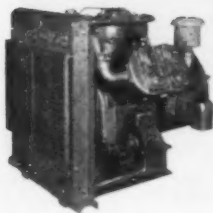
[World Mining Section—16]

MINING WORLD

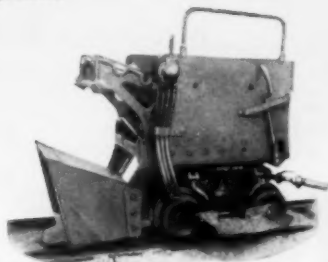
Low-cost development and production with engineered deep hole percussion drilling equipment. Deep Hole Drills, Ring Seal Shank, Long-Feed Mountings, Sectional Rods and Couplings. Bulletin DHPD-1.



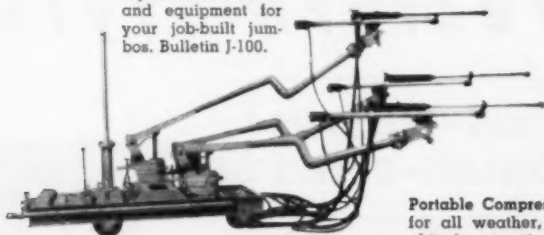
Compact and efficient air compressors.



Mine Car Loaders — fast, powerful, safe.



Hydraulic Drill Jumbos, Tractor Jumbos, Hydraulic Booms and equipment for your job-built jumbos. Bulletin J-100.

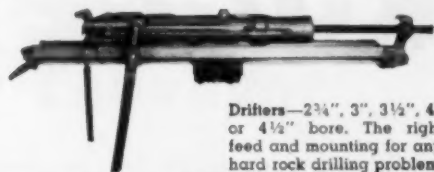


Portable Compressors for all weather, any altitude operation.

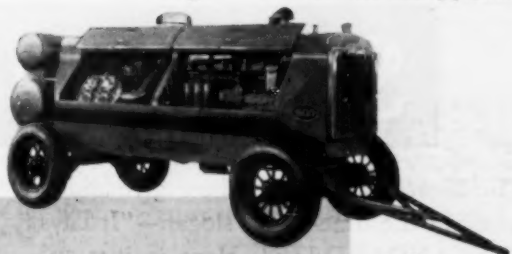
Stoppers — direct or telescopic — direct feed leg. Two sizes: 2 3/4" and 3 1/2".



Sinkers—hand-held or feed-leg mounted. The right combination for every rock.



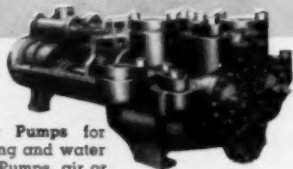
Drifters—2 3/4", 3", 3 1/2", 4" or 4 1/2" bore. The right feed and mounting for any hard rock drilling problem.



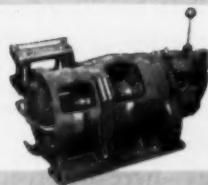
## Increase Your Mining Profit with help from Gardner-Denver



A Sump Pump that won't bury itself in mud.



Duplex Power Pumps for mine de-watering and water supply. Grout Pumps, air or steam operated.



High torque Airslushers and Air Hoists.



Drill Steel Sharpeners. Low-cost steel forming.

Write for descriptive information.

SINCE 1859



# GARDNER-DENVER



THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROPE DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

Gardner-Denver Company, Quincy, Illinois  
Export Division: 233 Broadway, New York 7, N. Y., U. S. A.



▲ A 20' long, 11'6" wide nodulizer section of a 10' x 150' Rotary Kiln ready for shipment from the Standard plant.

# RUGGEDNESS ... Western Style

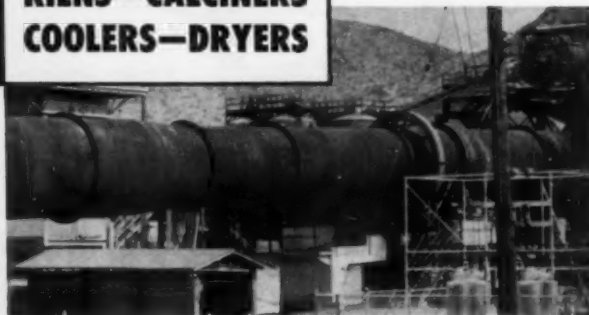
## STANDARD

**KILNS—CALCINERS  
COOLERS—DRYERS**

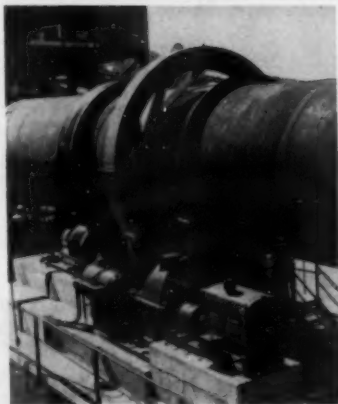
The illustrations shown here give added proof of the time-tested slogan—"It Pays to STANDARD-IZE". Here is just another example of Standard's ability to produce rugged rotary equipment for any job, large or small.

From all over the country—North, East, South, West—whenever the need is for dependability—the call is for Standard. See for yourself why the list of satisfied Standard users grows every day.

With over 50 years of precision engineering behind it, Standard is ready to help solve your problems—here or abroad. Write today for the complete Standard Story.



▲ A small section of the kiln, installed and in use at a large western manganese company.



◆ A close-up view of the same kiln. Note the solid construction. Standard Kilns are built to last.

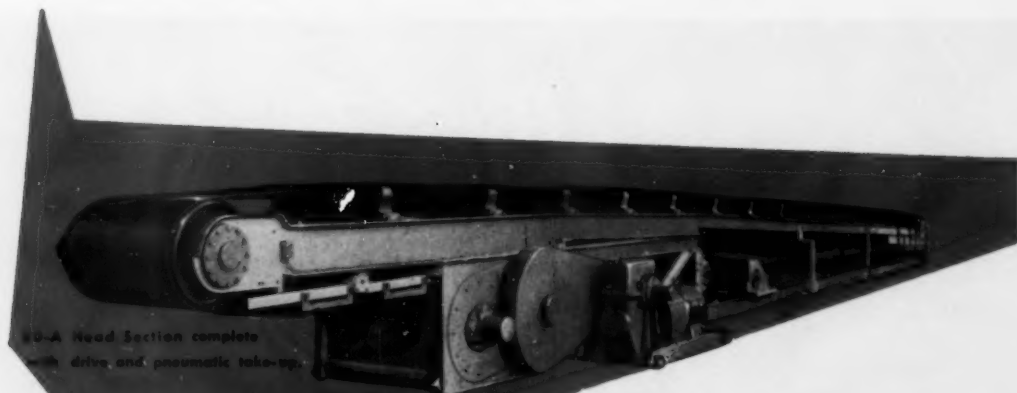


**STANDARD STEEL CORPORATION**

5031 Boyle Ave., Los Angeles 58

—●— 15 Park Row, New York 31





80-A Head Section complete  
with drive and pneumatic take-up.

## haul heavy loads away...the right way on a **JEFFREY** **80-A Belt Conveyor** (patented)

It's false economy to make a light-duty belt conveyor haul heavy loads in your mine. "Don't send a boy to do a man's work," the old saying goes. You need the Jeffrey 80-A Belt Conveyor designed especially for heavy haulage.

Both the 80-A head section and frame are built with high speed, high tonnage and rough-



Loading Station with  
Impact Idlers mounted  
on 80-A frame.

duty service in mind. For semi-permanent or permanent main-haulage systems, the 80-A Belt Conveyor can't be beat.

The husky head section incorporates a tandem drive which provides maximum contact with drive pulleys and permits operation with a minimum slack tension. Proper slack tension is automatically maintained by a pneumatic take-up. Bores for drive pulley bearings are machined in alignment so that assembly can be made only with shafts parallel and gears properly meshed. The head is built for motor drives up to 160 HP and belt speeds up to 600 FPM.

The sturdy 80-A frame is adaptable to 30", 36", 42" and 48" belts and 4", 5" or 6" diameter idler rolls. The frame permits a choice from a variety of standard idlers.

If your problem is heavy haulage, better haul it correctly from the start—on Jeffrey's heavy-duty 80-A.

Planning on replacement or modernization of parts of your present belt conveyors? No matter what the make, Jeffrey can supply Head Sections, Power Units, Tail Sections, Intermediate Sections, Idlers, Impact Idlers, Loading Stations with Impact Idlers, Horizontal Pneumatic Takeups and Speed Responsive Switches. Let us quote on these units.



# THE JEFFREY

ESTABLISHED 1877  
**MANUFACTURING CO.**

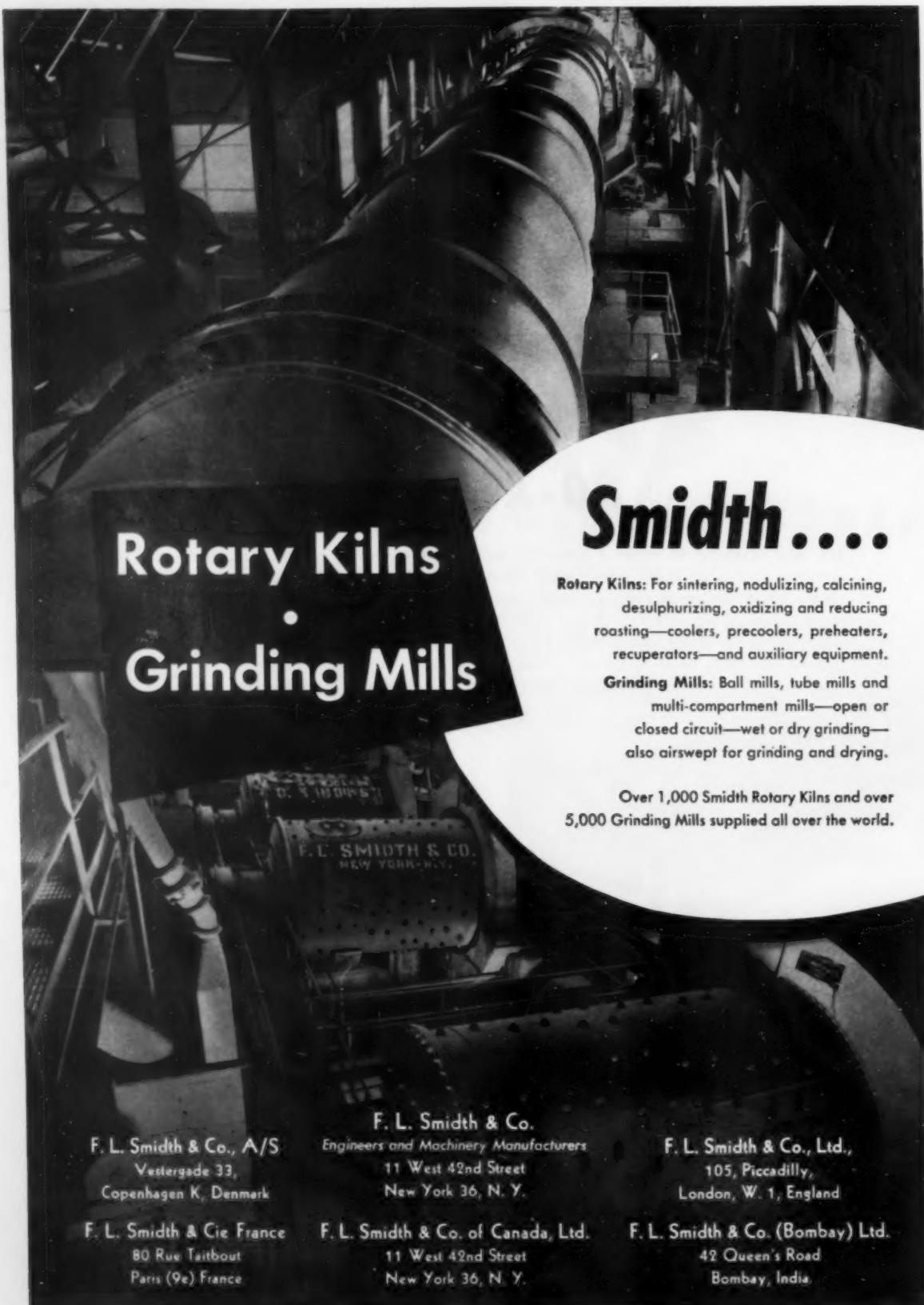
Columbus 16, Ohio

sales offices and distributors  
in principal cities

PLANTS IN CANADA, ENGLAND, SOUTH AFRICA.

IF IT'S MINED, PROCESSED OR MOVED  
...IT'S A JOB FOR JEFFREY!





## Rotary Kilns Grinding Mills

## Smidth....

**Rotary Kilns:** For sintering, nodulizing, calcining, desulphurizing, oxidizing and reducing roasting—coolers, precoolers, preheaters, recuperators—and auxiliary equipment.

**Grinding Mills:** Ball mills, tube mills and multi-compartment mills—open or closed circuit—wet or dry grinding—also airsept for grinding and drying.

Over 1,000 Smidth Rotary Kilns and over 5,000 Grinding Mills supplied all over the world.

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Engineers and Machinery Manufacturers  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co. of Canada, Ltd.  
11 West 42nd Street  
New York 36, N. Y.

F. L. Smidth & Co., Ltd.,  
105, Piccadilly,  
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42 Queen's Road  
Bombay, India





Wear Cap available on large sizes only.

### ESCO 12 M Tested Points and Wear Caps More Than Double Performance Life.

Cast of ESCO 12 M, ESCO Tested Points and Adapters are metallurgically engineered to the severe conditions of mining operations. ESCO Wear Cap Adapters

are now available with replaceable, slip-on Wear Caps for longer Adapter life.

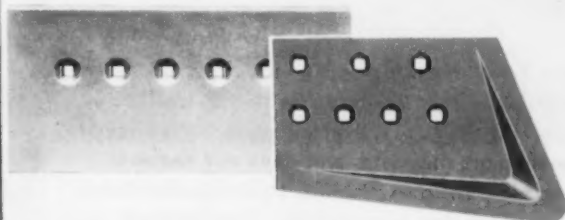
Every ESCO Point is Brinell tested before shipment to assure absolutely correct degree of hardness. ESCO points start sharp, stay sharp longer. Five ESCO Points can be removed and replaced in five minutes, cutting downtime to a minimum.



### ESCO Dragline Buckets and Dippers Designed For Greater Payload, Less Maintenance.

ESCO builds a complete line of dragline buckets, dippers, backhoes and orange-peels. All critical wear points on ESCO buckets are heavy-duty manganese steel castings, highly resistant to shock and abrasion of rugged mining operations.

All ESCO buckets are metallurgically tailored for extra strength with less weight, and designed for greater payload and sharply reduced maintenance. Special loading dippers or draglines can be built to your specifications. ESCO also manufactures a complete line of solid-cast chain and dragline replacement parts.



### ESCO Cutting Edges and End Bits Last Longer on Tough Mining Jobs.

The shock and pounding of rough work actually makes the surface of an ESCO Cutting Edge more wear

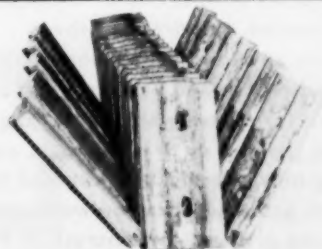
resistant—yet the core retains high impact toughness regardless of age or usage—even in sub-zero temperatures. ESCO End Bits stay on the job longer—even in sand and extremely abrasive material—because they are cast of ESCO 12 M.



### ESCO Dozer Rooter Rips Rock, Hardpan, Cuts Stripping Costs Up To 50%.

An ESCO Buck Forte Dozer Rooter outperforms a drawbar ripper, minimizes powder work by ripping through hardpan, rock, coal

and shale. Easily installed by one man on the blade of a straight or angled dozer. Rooting depth is adjustable. An ESCO Dozer Rooter is portable enough to carry on the tractor from one area to another. Sizes available to fit any dozer or angle dozer.



### ESCO Castings For Every Mining Requirement.

ESCO can furnish impellers, rabble arms, roaster arms, chute liners, grates, special valves, conveying chain, ball mill liners, mill

hammers or any special castings. ESCO has complete foundry facilities for static, centrifugal or shell castings of any size, shape or quantity in a wide range of alloys. Complete application engineering service available if needed.

**For Details  
See Your ESCO Dealer  
or Write Direct**

**ESCO  
ELECTRIC STEEL FOUNDRY CO.**

2147 N. W. 25TH AVE., PORTLAND 10, OREGON

712 PORTER ST., DANVILLE, ILL.

The **THUNE**  
SYDVARANGER PERMANENT  
MAGNETIC SEPARATOR

*Solves  
Scandinavian  
mining problems*

We have developed this new magnetic separator in cooperation with the wellknown mining firm A/S Sydvaranger. It makes use of permanent magnets, and does not require electric power to produce the magnetic field. Any dimension required can be furnished, but most of those we have delivered have a drum diameter of about 600 mm (24") and drum lengths varying from 225 mm (9") for small research separators to 1750 mm (69") for large production units. The drums may be furnished separately or built into separator chambers in units of one, two or three drums operating in series. Hundreds of these separators are already in operation in various parts of Scandinavian and other countries. They are used for dressing and extracting iron ore by either the wet or dry processes and for removing unwanted ferrous content from other ores. In actual application we have attained results giving a concentrate of 99 % purity with only 0,4 % magnetite in the residue, and only 30 % water in the concentrate.



We can also furnish lifting magnets, magnetic drums, pulleys etc. to the mining industry and other purposes.

*Our experts can solve*

*Write*

*Your Problems too!*



THUNES MEK. VÆRKSTED, OSLO, NORWAY

Here's Where **AMSCO®**

**"Wear-Sharp" Repointers**  
**INCREASED DIGGING**  
**LIFE 8 TIMES**

On a particularly rugged digging operation, Amsco manganese steel "Wear-Sharp" repointers increased the dipper's active service period by 8 times . . . operating an average of 32 days without repointing, as against 4 days for the type previously used.

Extend repointer or dipper tooth life on your dippers with Amsco "Wear-Sharp" repointers. When you fill their end grooves with Amsco hardfacing rod, you protect the tooth at the 6 points of maximum wear. This prevents corner blunting and equalizes wear along the entire cutting edge so that the tooth *stays sharp*.

Order Amsco repointers from your Amsco distributor. He carries a complete line of Amsco manganese steel dipper teeth, shapes and hardfacing materials.

Besides manganese steel, Amsco makes other alloy steels with high resistance to impact and abrasion.

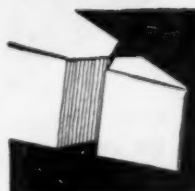


**FACTS ABOUT 3 TYPES OF  
AMSCO REPOINTERS**

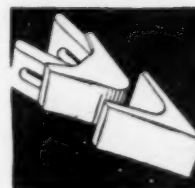


**"Wear-Sharp" Repointer (patented)—**

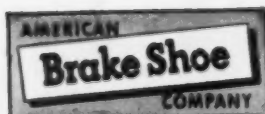
To equalize wear and maintain a sharp cutting edge, grooves on each end and on corner faces can be filled with a tough hardfacing deposit. It prevents the tooth from rounding or blunting. Teeth stay sharp, helping to maintain digging speed and to conserve power. Available straight (shown) or with crescent-shaped backs.



**Repointer Bars**—Excellent for rebuilding teeth used in heavy digging, these repointers are made of tough, wear-resistant manganese steel. They are delivered in bars of 3-foot length and cut to the width of the tooth on the job. They are also being used for rebuilding lips on dippers, clamshell buckets, ore loaders and dragline buckets.



**Cast-to-Shape Repointers**—Ideal for less severe digging, these manganese steel repointers are easy to weld on. An average-size tooth can be completely rebuilt in about 15 minutes, using only two electrodes. Cast with "ears" that protect the flat sides of the tooth, these repointers add strength and service life to the entire tooth.



**AMERICAN MANGANESE STEEL DIVISION**  
Chicago Heights, Ill.

Cut drilling costs with

**THROWAWAY**

Bits...

**Save Steel  
Save Powder**



**1** Easily deformable skirt permits quick removal of bit from shank. No lost time with stuck bits.

**2** Ample chip clearance allows faster drilling.

**3** Short reaming sides eliminate sticking and allow close gauge following.

**4** Blunt non-breaking cutting edges have self-sharpening tendency . . . are uniformly tempered hard, biting steel.

**5** Large hemispherical non-plugging water outlet.

**6** Lathe-cut, ground or forged parallel shank fits firmly into close tolerance bit socket. No threads required. Perpendicular socket wall allows shank to bottom in bit for maximum performance.

**7** Perfect uniformly treated bit teeth assure best possible cutting power and smooth operation.

**L**OWER your drilling costs with smaller holes and faster drilling. Bottom with 1 1/4 inch holes and save costly steel and powder. Forge the bit connection on your drill rods as regularly done on forging dies furnished by Throwaway Bit Corporation. Write for price list and technical information to Portland, Oregon U.S.A.



**THROWAWAY BIT CORPORATION**

4200 N. W. YEON AVENUE., PORTLAND, OREGON, U. S. A.

HOME OF THE ORIGINAL THROWAWAY BIT.





## Here's How **HYSTER** Planned Materials Handling **SAVES TIME and MONEY** in Mining Operations



The YT-40 with Revolving Load-Grab picks up packaged mine timber for delivery to the elevator.

Here are typical examples of how Hyster® Industrial Trucks are helping to make *tremendous* savings in materials handling costs in mining operations.

Whether you are now using lift trucks, or haven't ever used industrial trucks of any kind, your Hyster Dealer is ready to help you achieve cost reductions. Because he keeps abreast of the materials handling problems and improvements, he has helped many mine operators realize more profit from their operations with these complete utility tools. *Why not call him today, and take advantage of his specialized services? Materials Handling Trucks from 1,000 to 30,000 pound capacities.*



Bundle is rotated so that longest dimension is vertical for descent in the narrow shaft. Cage capacity dictates size of packaged timber.

### HYSTER DEALERS GIVE YOU ALL 3!

**1. PLANNING.** Your Hyster Dealer will plan your materials handling operation from scratch—or will analyze your present system to see if it can be improved.

**2. THE RIGHT TRUCK** for your job from Hyster's complete line of industrial trucks (1,000-30,000 lbs) and over 100 job-attachments.

**3. THE RIGHT SERVICE**—ample spare parts stock, shop facilities, factory-trained mechanics and an efficient field service that keep your Hyster lift trucks going on your job, wherever your job might be located. Hyster trucks are noted the world over for their low downtime.



FOUR FACTORIES: Portland, Oregon; Danville, Illinois; Peoria, Illinois; Nijmegen, The Netherlands.

# HYSTER COMPANY

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## KREBS CYCLONES

**... sharpest classification  
at lowest cost**

Krebs Cyclones are out-front in low cost classification thanks to a special moulded pure gum rubber liner that far outlasts any porous gum rubber or other type liner. Instances of service for a year or more without appreciable wear are not uncommon. Compare this with cases of rubber liners lasting weeks or sometimes only days as reported in literature on cyclones!

These moulded pure gum rubber liners are dense, smooth and *replacable* . . . an important factor in simplified and economical maintenance.

Krebs Cyclones are precision made with machined steel shells. Fitted with the pressure moulded liners, their complete weight is far less than cast iron on nihard cyclones. Engineered for an idealized force pattern, Krebs Cyclones in sizes from 4" to 30" are available either in single or integral two stage units. Long sweep inlet and adjustable valve are standard on all models. Special designs are available for unusual classifications. All units permit a wide change of inlet size, vortex size and apex valve for changes in objectives.

*Our metallurgical staff and pilot plant facilities are available on request. Details of your classifications are invited.*

### EQUIPMENT ENGINEERS, INC.

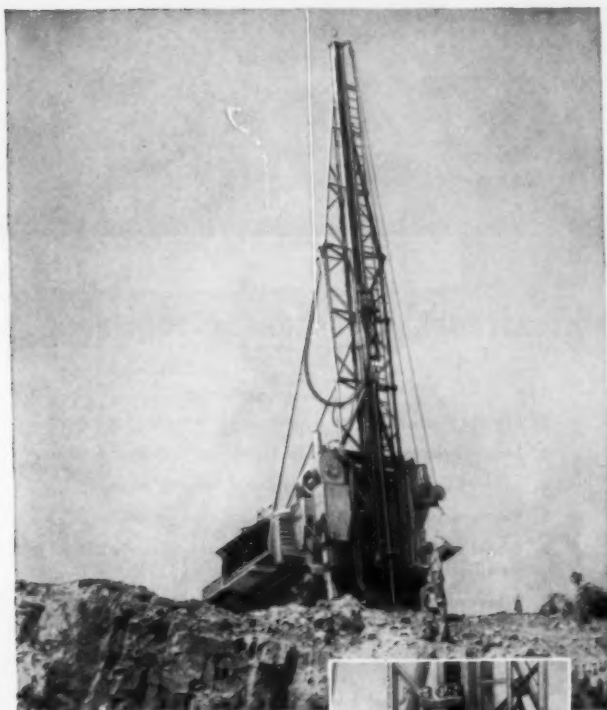
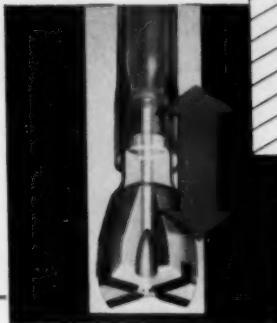
41 SUTTER STREET

• SAN FRANCISCO 4, CALIFORNIA

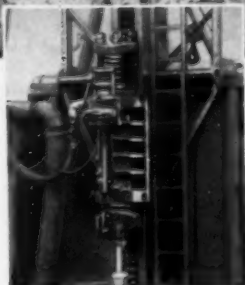
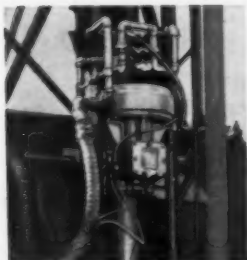
# NOW— ROTARY

## OR PERCUSSION DRILLING

### *with One Machine!*



Powerful air-operated piston drill strikes 200 blows per minute—uses Carset bits up to 6½" and drills from 10 to 50 Ft. per hour, depending on the rock.



The rotary drill head is operated by powerful twin multivane-type air-motors—uses rotary type bits up to 9" and drills 20 to 150 feet per hour depending on the rock.

## NEW UNIVERSAL

## QUARRYMASTER

**permits fastest drilling  
in any type of ground!**

Here is the first *universal drill*—a completely self-contained, self-powered and self-propelled machine with interchangeable rotary and percussion drill units.

When equipped with the powerful *piston drill*, the Quarrymaster can drill any type of material from the hardest rock to consolidated top soils and hard pans. When a *rotary* drilling head is applied, it is ideal for the softer or less abrasive rocks and overburdens.

In open pit mining, whether your cap rock is hard and the ore soft, or vice versa, the Quarrymaster will drill either one at the fastest rate and the cheapest way possible. If you are a drilling contractor or quarry operator the dual principle gives you the right drill for any rock conditions, anywhere.

Conversion from one type to the other takes but a few hours and consists of simply removing one drill from the tower and replacing it with the other.

Call your Ingersoll-Rand branch office today for complete information on the new Quarrymaster. Or write for your copy of Bulletin No. 4153.



## Ingersoll-Rand

11 Broadway, New York 4, N. Y.

9-72

ROCK DRILLS • COMPRESSORS • AIR TOOLS • TURBO BLOWERS  
CONDENSERS • CENTRIFUGAL PUMPS • OIL & GAS ENGINES

BEHIND **LIMA** QUALITY



## Heat treating gives **LIMAS** greater strength and longer service life

In the 1500 degree F. circle, formed by this battery of gas burners, is a shipper shaft pinion destined to become a vital part of a LIMA shovel. This heat, the succeeding water quench and controlled tempering process, establishes a uniform hardness up to two inches in depth to the teeth and teeth base of the pinion. This means longer serviceable life to this important part.

Flame and induction hardening are used on rollers, gears and shafts of every LIMA machine. Heat treating, used with our know-how, is one of the reasons why LIMA is known throughout the world for quality—cost-conscious equipment men everywhere are saying, "you can depend on a LIMA for low maintenance and less down-time."

**COMPARE QUALITY!** No other machine gives you as much as LIMA!

1. Piston ring type dirt seal rings and retainers in crawler rollers.

LIMA Type 2400—6 yd. shovel removing overburden in open pit mine.



2. Moving parts are flame or induction hardened for longer life.
3. Main machinery is placed well back of center of rotation.
4. Anti-friction bearings at every vital bearing point.
5. Big capacity drums and sheaves are easy on cables.
6. Propel and swing gears and power take-off are enclosed in a sealed oil bath.
7. Wherever you are, you can depend on skilled service and nearby warehouse stocks of parts to keep your LIMA on the job continuously.

The above advantages contribute to LIMA'S greater output, less down-time and lower maintenance.

**COMPARE** and you'll specify LIMA for shovels (¾ yd. to 6 yds.), cranes (to 110 tons) and draglines (variable). Smaller capacities available on rubber.

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

Cable Address: Limashovel, Lima, Ohio, U.S.A.



**LIMA** SHOVELS • CRANES • DRAGLINES • PULLSHOVELS  
**BALDWIN-LIMA-HAMILTON**  
 Construction Equipment Division • LIMA • OHIO • U. S. A.



Whatever the job—

# THERE'S A TO DRILL IT

## IDEAL FOR SOFTER ROCK FORMATIONS —

the CP-555 Rotauger's fast, powerful rotary drilling motor and its entirely independent rotary feed motor combine to more than double your footage in the softer formations. Available for wet or dry drilling, drills  $2\frac{1}{2}$ " holes in speeds of 2 to 4 feet per minute to depths of 100 feet or more.



## TWO TYPES OF AIRLEGS—

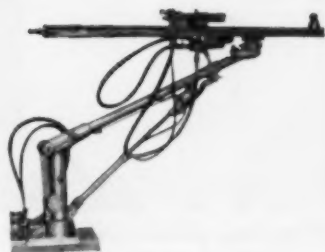
engineered to withstand constant recoil shock yet hold the drill firmly to the work, the CP Airleg affords the maximum drilling efficiency obtained when using Tungsten-Carbide bits. Available in attachable types for conversion of standard sinkers to airleg operation and in integral types for production drilling. And in feed lengths of 36" and 48".



## IDEAL FOR

### OVERHEAD DRILLING —

the well-balanced CP-34 Stoper gets more advance every raise round. Because it has just the right piston speed, foot-pound blow, rotating speed and feed pressure, it gets the most service and footage from Tungsten-Carbide bits.



## FOR FASTER

### TUNNEL DRIVING —

the CP-50N Drifter combines strong rotation and fast hitting action and correct foot-pound blow for maximum penetration with Tungsten-Carbide bits. And it's ideal when used with the CP Air Actuated G-600 Drill Jumbo.

**Also Available.** Skid Mounted Diamond Core Drills for Exploratory Drilling, and a complete line of pneumatic tools and portable or stationary air compressors.

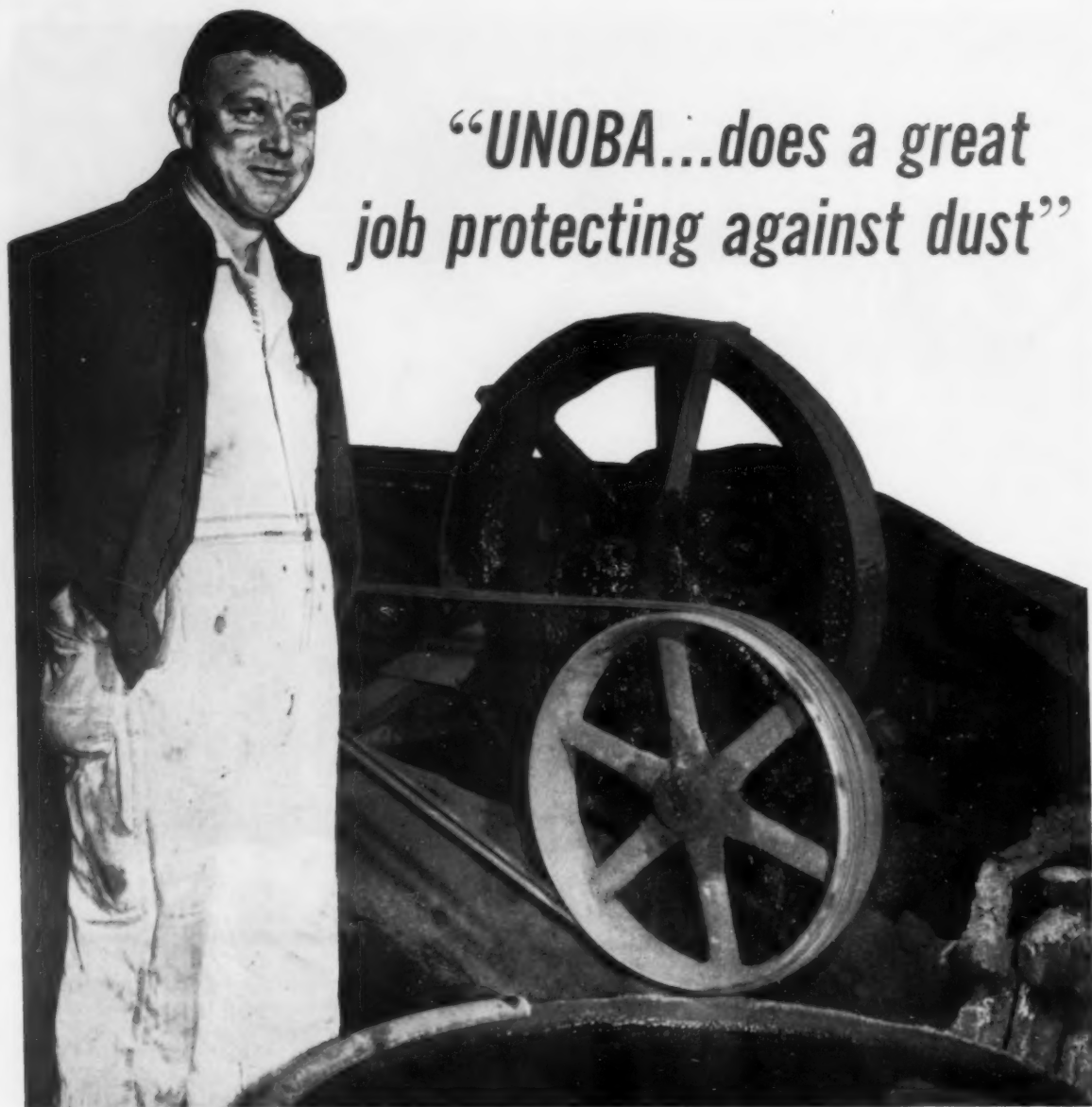


# Chicago Pneumatic

8 East 44th Street, New York 17, N. Y.

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES  
CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

[World Mining Section—29]



**"UNOBA...does a great  
job protecting against dust"**

**R. V. Hamilton, general superintendent, Trout Mining Div.,  
American Machine & Metals, Philipsburg, Montana.**



"Extreme dust conditions characterize our operation, the production of grade A battery manganese.

"The abrasive effects of manganese dust on machinery can be a real problem. However, we have successfully solved this one by lubricating with Union's UNOBA F-1. No other grease I know of does such a great job of protecting bearings and other moving parts against dust abrasion. And we can use this same grease everywhere in the mill, even where heat, moisture and acid conditions prevail.

"An example is an open drive shaft in our mill which has been in continuous operation for three years — without

UNOBA's protective film in the pillow blocks this shaft would probably require replacement every few weeks. Believe me, proper lubrication with UNOBA has saved us a lot of time and money since we started using it back in 1949."

If dust is a problem in your operation we suggest that you do as Mr. Hamilton did. Call on your nearby Union Oil representative for UNOBA, the *multipurpose* grease.

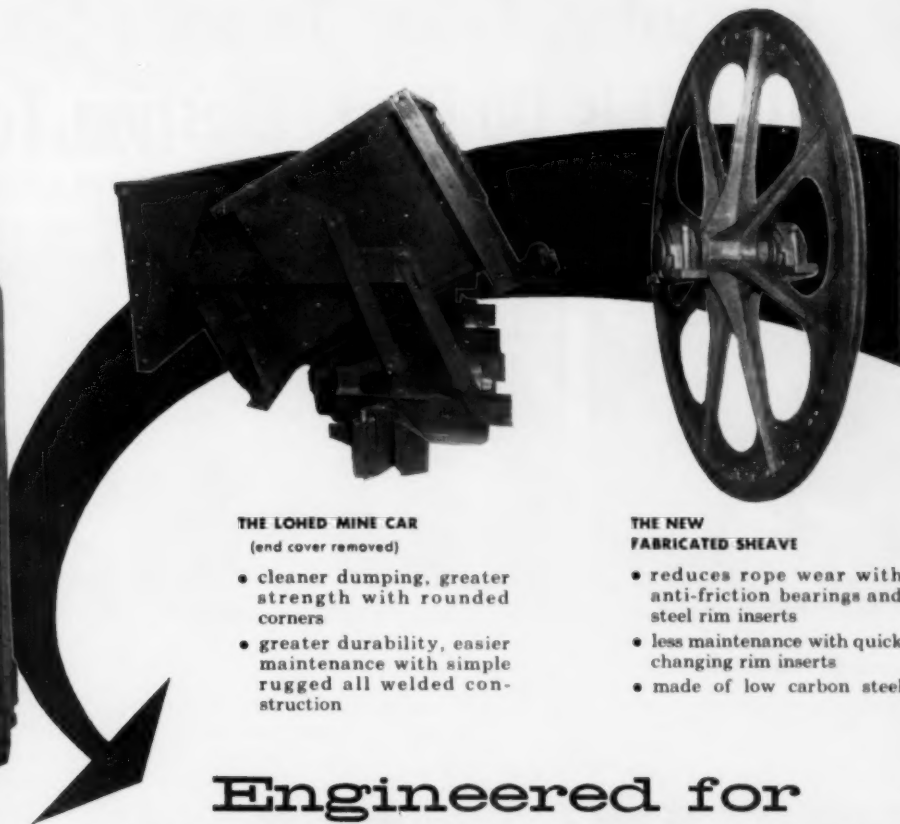
**UNION OIL COMPANY 76**  
OF CALIFORNIA

Los Angeles: Union Oil Bldg. • New York: 45 Rockefeller Plaza • Chicago: 1612 Bankers Bldg. • New Orleans: 644 National Bank of Commerce Bldg. Atlanta: 401 Atlanta National Bldg. • Kansas City, Mo.: 612 W. 47th St.



**THE "JETO"  
BOTTOM DUMP SKIP**

- less dead load, greater pay load with light-weight aluminum and steel construction
- increased production with cleaner faster dumping action
- Lighter less expensive headframe construction due to greatly reduced headframe travel
- greater safety with positive dumping action and body safety latch



**THE LOHED MINE CAR**  
(end cover removed)

- cleaner dumping, greater strength with rounded corners
- greater durability, easier maintenance with simple rugged all welded construction

**THE NEW  
FABRICATED SHEAVE**

- reduces rope wear with anti-friction bearings and steel rim inserts
- less maintenance with quick changing rim inserts
- made of low carbon steel

## Engineered for the rugged demands of metal mining!

For close to 100 years Lake Shore has focused its seasoned engineering attention on developing equipment to make metal mining operations more efficient and safer. Excellent results of that continuous effort are the "Jeto" bottom dump skip, the new fabricated sheave, and the all welded "Lohed" mine car; useful developments that have achieved increased production, lower maintenance costs, and longer equipment life for the metal mining industry. Write for detailed product bulletins.

# LAKE SHORE

## Engineering Company

Iron Mountain 1, Michigan  
Plants: Iron Mountain and  
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Branch Offices: Denver • Chicago • New York • Detroit • Phoenix  
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Underground cars • skips • cages • trestle cars • sheaves  
grizzlies • snatch blocks • hoists • mills • special equipment

# For Safer, Better Taconite Shooting Use This Du Pont "Blasting Team"



**1. Taconite's the target** of blasting operations at this Minnesota open-pit mine. To break it better, and with maximum safety, they're using a Du Pont "blasting team."



**2. Loading Du Pont "Nitramex"® No. 2** into holes. Fire, friction and sudden shock have no effect on this reliable blasting agent. The ultimate in safety—and it hits hard!



**3. Operators** connect up Du Pont "Nitramon"® Primer with "Primacord," then lower it. Also relatively insensitive to the various hole hazards, this Primer can be counted on to do its job.



**4. Pouring Pelletol No. 1** around "Nitramex" No. 2 column. This free-running blasting agent quickly settles, giving maximum loading density at bottom of hole. Waterproof, too.



**5. MS Connectors** (MS-9 or -17) provide any number of delay intervals needed . . . improve breakage, minimize vibration. Thanks to them, *no caps are on the job until shot is ready to fire.*



**6. After the blast**—a pile of well-broken taconite. Another tough job successfully done with the help of this efficient, safer, more economical Du Pont "blasting team."

If you're not already using a Du Pont "blasting team," put it to the test soon. You'll find it improves fragmentation, increases safety and reduces vibration and backbreak. For complete information on each of these dependable products contact the Du Pont man in your district. He'd like to be of service to you. E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington 98, Delaware.

## DU PONT BLASTING AGENTS

*Products of Du Pont Research*



BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY



# **NATIONAL IRON COMPANY'S ROCKOVER SKIP SYSTEMS . . .**

National Iron Company's Rockover Skip Systems are engineered to provide an expensive movement of bulk materials from the bottom of open pits to surface. The head frame structure is located on the surface and can be a simple unloading structure, or it can provide crushing, screening, loading, and/or concentrating equipment.

Skip run can easily be lengthened by adding track and MOVING the Skip Landing Point to follow the mining or quarrying operations to deeper levels.

**THE SURFACE STRUCTURE REMAINS STATIONARY FOR THE LIFE OF THE OPERATION.**

Designed to handle any-  
thing shovels and trucks  
can handle—no material  
too abrasive or blocky.

## **NATIONAL IRON COMPANY**

# EARTHMOVER

Controls are operated by water pressure.  
Intelli-Giant operates at 30-300 lbs. pressure.



▲ Operator in sitting position controls movement of gun  
—320° horizontally, 120° vertically—with no effort.



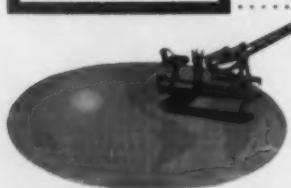
## 1955 MODEL...

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**new**

*chiksian intelli-giant does the job cheaper!*



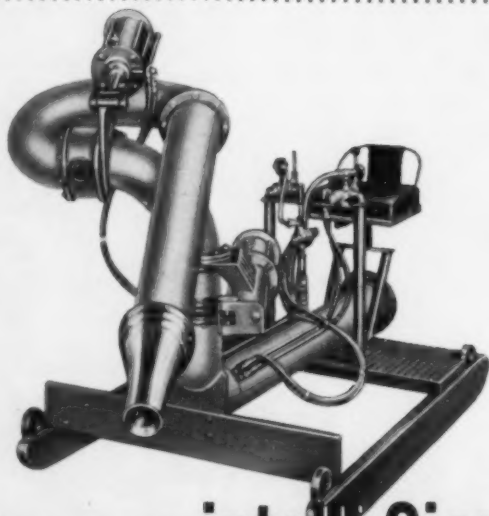
One progressive operator of hydraulic monitors in the phosphate fields of Florida has estimated a saving of 7,000 man hours a year,

based on three shifts, or a total of over \$10,000.00 by employing Chiksian Intelli-Giants to do the job.

Another large operator estimates that thru the larger area of earth covered and the use of 3 Chiksian Intelli-Giants hooked up in remote control they will save approximately \$22,000 a year in direct labor costs.

After 8 years of exhaustive engineering and field testing, under the most exacting conditions, CHIKSAN has introduced the FIRST revolutionary improvement in hydraulic mining and earth moving in 90 years.

Exacting tests in the removal of perma-frost in Alaska, sluicing in the phosphate fields of Florida, dam construction in Oregon and California have proved the high efficiency and extreme economy of the NEW CHIKSAN INTELLI-GIANT.



**CHIKSAN** **intelli-Giant**

CHIKSAN COMPANY • BREA, CALIFORNIA • Chicago 3, Illinois • Newark 2, New Jersey  
Well Equipment Mfg. Corp. (Division) Houston 1, Texas • Subsidiaries: Chiksian Export Co., Brea, Calif.; Newark 2, N.J. • Chiksian of Canada Ltd., Edmonton, Alta.

# How the Mineral Industry Advanced Technology in 1954

By V. L. Mattson

Director  
Colorado School of Mines Research Foundation  
Golden, Colorado



Government activities continued as the paramount single factor in the mineral industry during the past year. Regardless of our individual feelings in the matter, we must recognize the extent of domination of all phases of the mining industry by Washington policy. Whether we are concerned with finance, exploration, production, or selling, it is seldom possible to act without due regard to current Washington policy.

It is indeed a sobering thought to realize that a segment of the mineral industry as important as the new uranium giant is 100 percent dependent on government policy. We cannot overestimate the importance of government influence when we consider such acts as the May 21, 1954 GSA decision to acquire 64,000 tons of Chilean copper at 30 cents per pound. Nor could we minimize the effect of the decision last July to purchase 200,000 flasks of mercury at \$225.00 per 76-pound flask. The government's decision to buy 200,000 tons of lead and 300,000 tons of zinc was a move of the greatest importance to the domestic mining industry.

When government policy must be dictated by World forces of such magnitude as those pressing us today, it is indeed difficult to prepare a comprehensive accounting for our mineral industry. Development programs that may be laid on the shelf for future years understandably can receive top priority urgency rating overnight. In a like manner, production programs which yesterday were considered very essential may tomorrow be idled by an expediency decision which originates entirely outside of the industry most affected.

If we turn to the story of technological developments during 1954, we find much more interesting and pleasant reading. This special report is concerned with these developments.

## EXPLORATION

For the first time in history, we have witnessed a mining boom in which geophysical exploration has been indispensable. The Geiger counter and the scintillation counter are the basic tools of the uranium prospector. With tens of thousands of these instruments in daily use, it is inevitable that improvements in design and efficiency should follow. Many of the newer instruments are marvels of light-weight and rugged construction.

Radiometric prospecting from the air continued to be a major factor in 1954. One AEC official estimates "that as of December, 1953, 75 percent of the ore reserves of the Edgemont district, South Dakota, were direct results of airborne discoveries." During the year 1954 the Atomic Energy Commission operated 10 light aircraft on exploratory missions. The United States Geological Survey used two DC-3's for radiometric surveying. It is estimated that between 75 and 100 private aircraft were used for radiometric prospecting during 1954.

Airborne radioactivity surveys totaling many thousand of miles of traverse were flown over the deposits of uraniferous phosphate land in Florida. The tremendous amount of data being collected from airborne surveys from all over the world is contributing to the rapid development of new techniques in interpretation. The piñon-snagging rim-rock pilot has made a substantial contribution to our rapidly growing reserve of fissionable minerals.

The value of non-core producing exploratory drilling has increased greatly with the development of logging techniques. Many major equipment design problems were involved in adapting the large bore equipment used by the oil company geophysicists to the small bore holes of the mining industry. Both government agencies and geophysical service companies are now using combination gamma-electric logging, seismic refraction, and resistivity techniques.

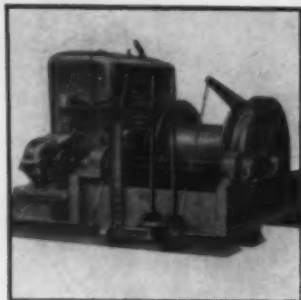
The development of a NX Borehole camera by the United States Army Corps of Engineers should provide a valuable tool to the prospector.

The unprecedented exploratory-drilling campaign on the Colorado Plateau is providing a unique opportunity for a comparative study of statistics covering methods, equipment, and contractual procedures. Various government and private reports that were issued in 1954 have provided information covering the drilling of millions of feet of exploratory holes by diamond core drills, wagon drills, rotary drills, and others. The tremendous demand for improved drilling techniques has contributed to at least three equipment improvements in 1954. The new Bucyrus Erie 50T unit is an extremely flexible blast-hole-type drill which handles a 6,000 pound tool string. The

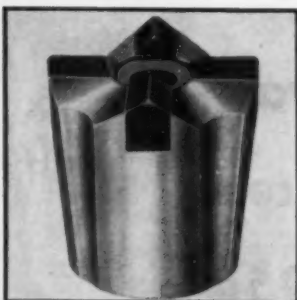
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# UNDERGROUND

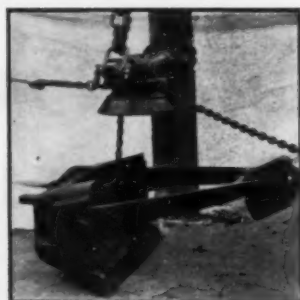
## Blue Ribbon Equipment Developments for 1955



**GASOLINE DRIVEN MINE HOIST** was designed by Vulcan Iron Works for vertical or inclined shaft work at small operations. The 105 horsepower engine develops a 5,000 pound rope pull, and the drum will accommodate up to 1,000 feet of wire rope. Circle No. 1 on the reader inquiry card.



**LIDDICOAT T&C** tungsten carbide insert bits were designed for on the job interchange with Liddicoat "used to destruction" bits. Both types fit the same drill steel. They are available from Western Rock Bit Manufacturing Co. Circle No. 2 on the reader inquiry card.



**ROUND THE CORNER SHEAVE BLOCK** has been newly redesigned, and opens the door for cost cutting practices in operations where double slushing is required. It is marketed by Alley Steel & Metals Co., and is ideal for square set mining. Circle No. 3 on the reader inquiry card.



**WILLISON COUPLER**, of reduced size, is designed for application to small 1 to 4 ton cars. The small version has all the safety features of the regular Willison. National Malleable & Steel Casting Co. developed the new coupler. Circle No. 4 on the reader inquiry card.



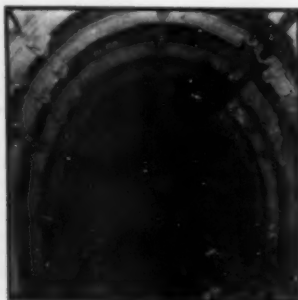
**ATTACHABLE ELECTRICAL PLUGS** for sectionized portable power cable have just been developed by Joy Manufacturing Co. Male and female plugs can be quickly attached to cable ends, and actually coupled or uncoupled by a 1/4 turn. Circle No. 5 on the reader inquiry card.



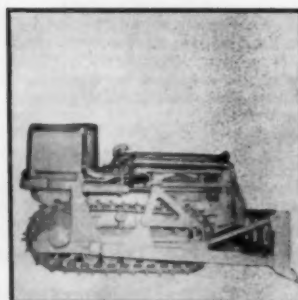
**TORQUE CONVERTERS GO UNDERGROUND** on the 3 ton Diesel locomotive manufactured by Universal Dredge Manufacturing Company. Steady constant acceleration, increased draw bar pull and elimination of shock loads are among the advantages. Circle No. 6 on the reader inquiry card.



**SINTERED CARBIDE ROTARY BITS** and sectional augers allow long hole drilling to hole depths of 100 feet. Developed by Kennametal Inc., results have been favorable in exploratory gypsum drilling as well as seams of anthracite coal. Circle No. 7 on the reader inquiry card.



**YIELDING STEEL SETS** differ from the conventional rigid type in that they give rather than deform under excessive pressure, thus allowing surrounding strata to stabilize naturally. They are made by Bethlehem-Pacific Coast Steel Corp. Circle No. 8 on the reader inquiry card.



**UNDERGROUND CRAWLER**, made by Caterpillar Tractor Co., is equipped with an exhaust conditioner made by National Mine Service Co. The D4 was the first tractor granted approval by the U. S. Bureau of Mines for underground non-coal use. Circle No. 9 on the reader inquiry card.



# UNDERGROUND Blue Ribbon Equipment Developments for 1955



**KING-SIZE CARTRIDGES** offered by Hercules Powder Company come in 34, 20, 16, and 12-inch lengths, and small diameters (up to 2-inches). They cut loading time and make possible better fragmentation due to blast of continuous explosive train.  
Circle No. 10 on the reader inquiry card.



**NEW SAFETY LOCK** actuated by foot release on either side of rocker dump car prevents car dumping toward operator. It is also positive in stopping car body on center during return motion. The unit is made by The C. S. Card Iron Works Co.  
Circle No. 11 on the reader inquiry card.



**NEW HYDRAULIC RAIL BENDER** is available in 3 sizes for rails of 20 to 80 pound sections from The Alden Company. The bender, with self contained pressure unit, cuts down on the time and effort required for normal track maintenance.  
Circle No. 12 on the reader inquiry card.



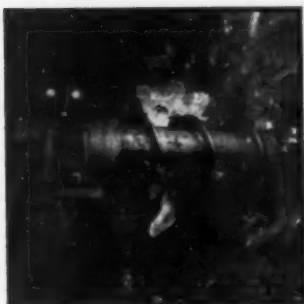
**GISMO METHOD** has attracted considerable attention with a general purpose self-loading transport made by Sanford-Day Iron Works, Inc. The Gismo can be used for either trackless mining or in tracked development headings underground.  
Circle No. 13 on the reader inquiry card.



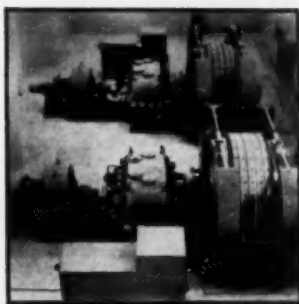
**DIESEL EXHAUST FUME ELIMINATOR** with one of the catalytic units that are the heart of the exhaust system. The twin-flow catalytic muffler is one of several models offered by Oxy-Catalyst Inc., for underground and other applications.  
Circle No. 14 on the reader inquiry card.



**18 TON UNDERGROUND SHUTTLE** truck made by Dart Truck Company features hydraulic steering and a hydraulic motor which operates apron conveyor in bottom. The Diesel drive is equipped with a torque converter and reversing transmission.  
Circle No. 15 on the reader inquiry card.



**KA-MO DRILLS** used to drill the "burn cut" in a drill round are said to produce extra tonnage and greater advance per shot; all of which means less cost per ton. This large auger-type drill is manufactured by Ka-Mo Tools, Inc.  
Circle No. 16 on the reader inquiry card.



**KOEPE MINE HOIST** of the friction drive type has stirred considerable interest in United States mining circles. The unit is available through Aros Electric Company, and features lower power consumption, less weight and rope wear.  
Circle No. 17 on the reader inquiry card.



**"UTILISCOPE" WIRED TELEVISION** is becoming of increased use in providing centralized control of mining (above or below ground) and milling operations. This unit is offered by Diamond Power Specialty Corp. of Lancaster, Ohio.  
Circle No. 18 on the reader inquiry card.

## Technological Advances

new VRM wagon drill unit of The Gardner Denver Company has special features of interest to exploration drilling. These include dual hydraulic lifts, a four-inch drill, chain feed, eight-foot steel changes, and hole cleaning at full line pressures. The E. J. Longyear Company recently announced a new "Jeep mounted" Prospector. This is a three-speed drill with lightweight aluminum mast, equipped with screw feed or hydraulic swivelhead for use with "E" or "A" drill rods. The development of drilling equipment especially adapted to the rugged terrain of the remote Plateau country has been an important contribution.

An idea of the magnitude of the drilling exploration activity in the uranium country is obtained from the following statement by an Atomic Energy Commission official: "The Commission's exploration program utilized some 200 vehicles, 150 house trailers, 22 caterpillars and 150 other items. . . . The program of the United States Geological Survey requires similar amounts of equipment."

"Annually the footage drilled by the Atomic Energy Committee amounts to slightly over 500,000 feet; the Survey drills a like amount and private enterprise this year will drill more than double this combined footage for an overall total of more than 3,000,000 feet. . . ."

"The Commission lists nearly 150 drilling contractors. . . ."

It is reported that mining of drilled-out areas in the Plateau has yielded an average of 25 percent more ore than was indicated by the drilling program. The same source indicates that the grade of ore actually mined has fallen about 10 percent below the grade indicated by drilling.

As has been frequently true in past years, most of the major developments in exploration geophysics have originated with the oil companies. The adaptation of petroleum exploration techniques to the search for minerals has produced some interesting developments during the past year. The application of simultaneous radioactive and resistivity logging to locate mineralized zones in shallow core holes has to some extent obviated the need for continuous coring.

A broad study of all measurable physical properties of uranium ore and enclosing rocks is now being considered for an area covering several of the western states. The data obtained from thorough electric logging of the drill holes and careful analysis of the cores will contribute much to a better understanding of the genesis of the uranium minerals.

One of the outstanding geophysical developments of the past year is the nuclear magnetometer, which was announced by Varian Associates of Palo Alto, California. A polarized proton sample is allowed to precess in the earth's magnetic field. The frequency of recession is a measure of the field. Possibilities appear favorable for extensive airborne use of this new instrument.

Another interesting and probably important development in the field of exploratory geophysics is the "MoMag." This is the trade name for an automatic-recording total-intensity mobile magnetometer produced by United Geophysical Corporation. This instrument is mounted for continuous field operations on a four-wheel drive vehicle. For highway operation it will record at speeds as high as 40 miles an hour. The "Mo Mag" is particularly useful in locating deposits that are associated with magnetite. Because of the frequent occurrence of magnetite as an accessory mineral in high-temperature fissure veins and contact-replacement deposits, it should prove useful in the location of ore deposits of such metals as copper, lead, zinc, tungsten, and molybdenum. The "MoMag" may also be useful for delineating fault zones, basement highs and lows, buried flows, and concealed structural features.

A most important contribution to the theory of magnetic exploration has come from the Department of Terrestrial Magnetism of the Carnegie Institution of Washington. This organization is presently investigating unexploited petrofabric element of magnetic susceptibility anisotropy. An instrument has been developed which is capable of detecting extremely small differences in susceptibility.

The Atlantic Refining Company has developed a general low-frequency-electrical earth model which simulates earth characteristics when excited by currents either conductively coupled to the earth by electrodes or inductively coupled to the earth by loops. The application of this study to mining problems has not been reported.

The development in 1954 of an extremely precise timing device by Tracerlab resulted in an extensive research project in Canada with the falling-body gravimeter.

Special reflecting seismic instruments have been developed for mapping shallow horizons. Both the Geophysical Division of the United States Geological Survey and the Kennecott Copper Corporation (Bear Creek Mining Company) have contributed to this development during the past year.

The "Geigraph" was a contribution of the McCollum Exploration Company during 1954. This instrument utilizes the seismic energy produced by dropping a 6,000-pound weight at closely spaced intervals. The method is said to be cheaper to operate than the conventional seismic reflection method.

The U. S. Bureau of Mines made important contributions in exploration instrumentation during the past year. Accelerometers, velocity gauges, and other instruments used in seismic measurements were shown to give reliable data when used to record seismic pulses generated in rocks by the detonation of explosive charges.

The continued interest of geochemical and geobotanical methods of exploration was evidenced by various developments in 1954. Experimental studies of color changes from red to grey in siltstones and shales were conducted in certain uranium-ore districts. Some additional studies were made to determine the effectiveness of sulphur-indicator plants in indicating the presence of uranium. A survey of this type was recently conducted in the vicinity of Thompsons, Utah. Progress in analytical techniques for micro-determination of uranium dissolved in stream water may prove useful in locating uranium deposits.

### UNDERGROUND MINING

During 1953 equipment and techniques relating to shaft activities were the outstanding underground achievements of the year. This trend continued through 1954, and for another year some of the outstanding developments in shaft sinking and hoisting practice came from Africa.

Friction hoists of the so-called Koepe type are gaining in popularity not only in Africa but in the Scandinavian countries as well. The first Koepe-type hoist in the United States is being installed at the "C" shaft of the Cleveland-Cliffs Iron Company at Ishpeming, Michigan. Friction hoists of this type were originally developed in Germany for coal mine installations. They are proving satisfactory in both deep and shallow shafts and in metallic mines as well as in coal mines.

The Koepe system was originally a German development. It consists essentially of a single rope passing over a pulley with a balance rope connecting the bottoms of the two skips. Power is transmitted by friction between the rope and the drive wheel, or, "Koepe Sheave." This wheel may be mounted on the ground in the hoist house, or it may be in the head frame directly over the shaft. The chief advantage of the Koepe system is the substantial reduction in inertia of the drive pulley or sheave as compared to a conventional drum hoist.

The need for highly developed braking systems is evident with this type of hoist. A new development in hoist braking was announced in England last year. It is a quick-acting power brake invented by R. W. Bell and R. Ellis.

Extensive use of reinforced concrete in head frame construction was observed in Africa, continental Europe, and in the Scandinavian countries. Some of the South African installations resembles giant farm silos. With friction-drive hoists where the entire mechanism is mounted above the shaft, the circular concrete design may have some advantages.

The use of rubber-tired rollers to reduce wear on guides and guide shoes is reported to be satisfactory. The value of this practice is particularly apparent where there is some misalignment due to subsidence or other causes.

Light, tubular, scaffold-like construction is being used for temporary prospecting head frames. It is also useful for roof scaling operations. These structures are lighter and stronger than timber and can be erected and torn down much faster than wooden structures.

Shaft sinking records continued to fall in 1954. If we are to believe reports from behind the Iron Curtain, sinking rates of from 100 to 120 meters per month are common practice in the East Zone of Germany and in other parts of Soviet territory. A recent review of mining technology from Soviet territory pictures many weird devices for shaft sinking. Tremendous clam shells and orange-peel buckets with power closures are illustrated. A planetary-type rotary bit for shaft sinking apparently removes the need for drilling and blasting. A cable-supported platform five stories high houses drilling and mucking equipment as well as all facilities for grouting and shaft lining.

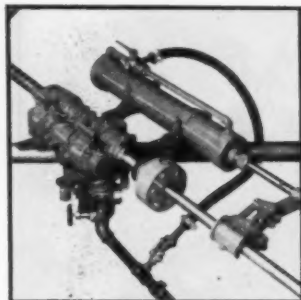
Drilling practice continues toward lighter drills and smaller steel for underground work. More drills of the jack-leg type and fewer column and bar mounted machines is the trend in this country and abroad. Calumet and Hecla reports 30 percent more footage with the light drills and small steel. The lighter drill with carbide-tipped bits appears to be a combination that is here to stay.

A part of the increased over-all efficiency of the lighter equipment is attributable to the ease and accuracy with which holes

(Continued on page 42)

# EXPLORATION

## Blue Ribbon Equipment Developments for 1955



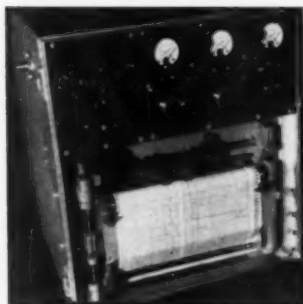
**UNDERGROUND DIAMOND DRILL** combines vane type air motor with 4-speed feed swivelhead. The Model VAG drill, offered by Boyles Bros. Drilling Co. Ltd., handles E rods to 1,000 feet. Pneumatic rod puller mounts on either side of swivelhead. Circle No. 19 on the reader inquiry card.



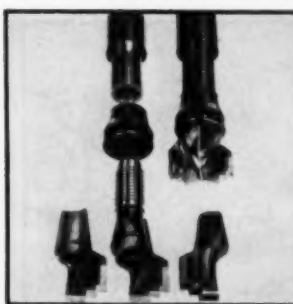
**OUTSTANDING MAGNETOMETER** development was Varian Associates' total intensity unit which does not require precise orientation or calibration. Hydrogen nuclei are used to record field changes. Hycon Aerial Surveys have exclusive rights. Circle No. 20 on the reader inquiry card.



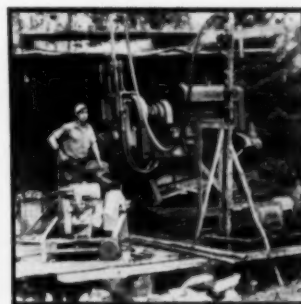
**IMPROVED SCINTILLATOR** made by Precision Radiation Instruments, Inc., features a special percent meter making calibration for uranium content easier. The Model 1118 counter utilizes a large 1 1/2-inch diameter sodium iodide crystal. Circle No. 21 on the reader inquiry card.



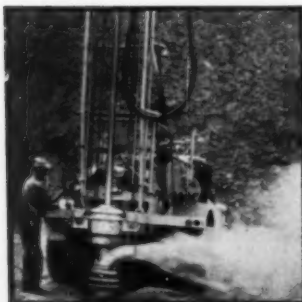
**VERSATILE RECORDER UNIT** simultaneously plots any two of a wide variety of electronic bore hole surveys. The Model WUS recorder, made by George E. Failing Co., is used for electric, caliper, gamma ray, and temperature logs for exploration. Circle No. 22 on the reader inquiry card.



**REPLACEABLE BLADE INSERT BITS**, marketed by Herb J. Hawthorne, Inc., will fit all rotary drill equipment. They are available in sizes ranging from 1 1/2 to 6 1/2 inches. Cutting surfaces of the blade contain tough tungsten carbide inserts. Circle No. 23 on the reader inquiry card.



**WIRE LINE CORE BARREL** developed by E. J. Longyear Co. permits removal of inner core barrel without hoisting the drill string. Surveys of 100,000 feet of drilling with wire line rigs show that core recovery was over 90 percent. Circle No. 24 on the reader inquiry card.



**NEW TRUCK MOUNTED ROTARY DRILL** made by Davey Compressor Co. is rated at 2,500 feet of 8-inch hole. The drill operates with both compressed air and water. Air compressor and pump are both driven by truck engine through a power take-off. Circle No. 25 on the reader inquiry card.



**HIGH RESOLUTION SEISMIC SYSTEM** was designed by Houston Technical Laboratories to meet demands for an extremely versatile system of exploration for minerals, to obtain detailed information in the depth range of 50 to 5,000 feet. Circle No. 26 on the reader inquiry card.



**PORTABLE DRILL RIG** is driven by power take-off directly from jeep or small truck. Developed by Acker Drill Co., Inc., this unit features a cathead winch, 3-speed transmission and built-in pump. Maximum depth rating is 500 feet. Circle No. 27 on the reader inquiry card.



# OPEN PIT

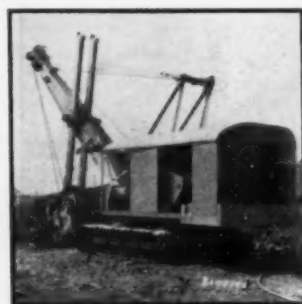
## Blue Ribbon Equipment Developments for 1955



**4 IN 1 TRACTOR ATTACHMENT** may be used as either a bulldozer, bulldozer, skid shovel or clamshell by placing the selector lever in the proper position. It is made by Drott Manufacturing Co. for International Harvester crawlers.  
Circle No. 28 on the reader inquiry card.



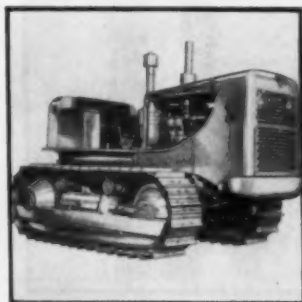
**NEW SUPER HEAVYWEIGHT CHAMPION** was designed to provide the added weight and thrust necessary for 9 to 12-inch blast holes in hard formations. Made by Jay Manufacturing Co., the rotary rig makes use of air-blast removal of cuttings.  
Circle No. 29 on the reader inquiry card.



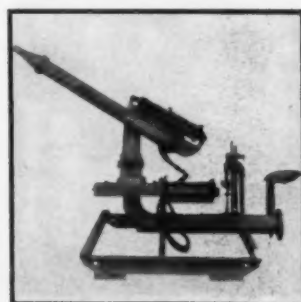
**AC ELECTRIC SHOVEL** with 2½-yard capacity answers the demand for an excavator operating on alternating current. Type 803, made by Baldwin-Lima-Hamilton, is equipped with a torque converter which adjusts automatically to digging needs.  
Circle No. 30 on the reader inquiry card.



**TRACTOR MOUNTED** hydraulic booms and rock drills are providing operators with a highly efficient mobile drilling unit. The Gardner-Denver assembly pictured here mounts two 4½-inch drills which may be operated from remote controls.  
Circle No. 31 on the reader inquiry card.



**COMPLETELY NEW CRAWLER TRACTOR**, the Allis-Chalmers 31,500 lb. HD-16 available with torque converter drive providing a drawbar pull of 60,000 lbs. offered the industry another surface mining tool. Diesel power unit develops 150 hp.  
Circle No. 32 on the reader inquiry card.



**HYDRAULIC MINING GUN** operates through 270° horizontally and 120° vertically. The operator, sitting at the controls, can direct, without effort, the movement of one or several monitors. Chiksan Company now markets the Intelli-Giant.  
Circle No. 33 on the reader inquiry card.



**33 TON CAPACITY REAR DUMP** shifts rapidly through 10 speed range up to 34 miles per hour. LaTourneau-Westinghouse Co.'s Model B features feather touch steering along with a wide, rugged body which provides a big target for speedy loading.  
Circle No. 34 on the reader inquiry card.



**BRAND NEW TRIPLE DUTY DRILL** by Ingersoll Rand Co., embodies three separate and distinct drilling methods. It can operate as a rotary drill, as a heavy duty out-of-the-hole drill, or as a down the hole unit for 6-inch diameter holes.  
Circle No. 35 on the reader inquiry card.



**ALL PURPOSE EXCAVATOR** features ready conversion to a 60 ton lifting crane, 2½-yard dragline, pull shovel or clam shell. The 2-yard shovel, manufactured by Marion Power Shovel Company, mounts a third, drum for handling odd jobs.  
Circle No. 36 on the reader inquiry card.



# OPEN PIT

## Blue Ribbon Equipment Developments for 1955



**SHOTMASTER BLASTING MACHINE** is a new generator-powered, condenser-discharge type developed by Atlas Powder Company. The condensers can't fire at less than capacity indicated by the voltmeter and there are no batteries to replace.  
Circle No. 37 on the reader inquiry card.



**ELECTRONIC SHOVEL CONTROL**, using grid control thyatron tubes, has been provided for the first time by Harnischfeger Corporation. It has resulted in faster, smoother operating motions, and is now standard equipment on all P & H shovels.  
Circle No. 38 on the reader inquiry card.



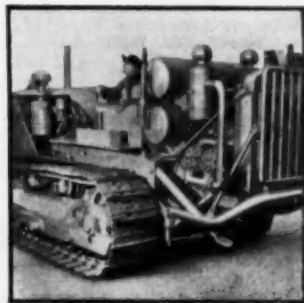
**REVOLUTIONARY TWIN CRAWLER** is being tested by Euclid Div. of General Motors. Each track is powered by 190 hp. Diesel engine through converter and torquatic transmission. Drawbar pull is almost equal to tractor weight and attachments.  
Circle No. 39 on the reader inquiry card.



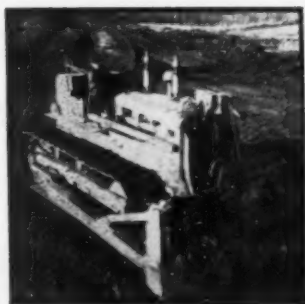
**NEW MOTOR GRADER** designed to handle heavy duty jobs with its 195 hp. Diesel power plant. Drive is supplied through a torque converter. Arched front axle of the Huber-Warco Co. grader gives a high window clearance of 32-inches.  
Circle No. 40 on the reader inquiry card.



**TRUCK MOUNTED** rotary blast hole drill, made by Reich Bros. Manufacturing Co., exerts 20,000 pounds on the bit which is sufficient for holes of 7½-inches in diameter. Extra drill stems are mounted in a turntable for loading.  
Circle No. 41 on the reader inquiry card.



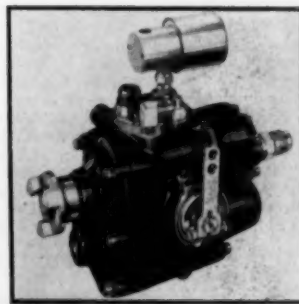
**TRACTOR MOUNTED COMPRESSOR** is directly connected to rear power take-off of a tractor. This 600 cfm unit, made by Le Roi Division of Westinghouse Air Brake Co., provides a more portable air supply. It can be disengaged from the engine.  
Circle No. 42 on the reader inquiry card.



**DIESEL CRAWLER TRACTOR** is said to be most powerful in world with 200 net engine hp. The torque converter on the International-Harvester TD-24 multiplies torque up to 5 times; an exclusive decelerator takes jabs out of pushloading.  
Circle No. 43 on the reader inquiry card.



**MODEL 40-R** blast hole drill announced by Bucyrus-Erie Co. features hydraulically controlled down pressure on bit, continuous drilling for 27½-feet before adding an additional pipe section, and Ward-Leonard control for rotation.  
Circle No. 44 on the reader inquiry card.



**NEW SIMPLIFIED FUEL SYSTEM** developed by Cummins Engine Company is based on a new principle of fuel injection. A simple metering device results in a fuel pump which is compact, easy to handle and which has far fewer working parts.  
Circle No. 45 on the reader inquiry card.

## Technological Advances

can be located where they will be most effective. Other advantages gained in the use of the light hand-held or jack-leg mountings are the ease of standardization of equipment and the higher percentage of time that the machines are in actual productive use.

Progress has been noted in the past year in equipment and methods for field mounting of carbide tips. Simple methods have been developed for relieving thermal stresses in brazed joints. New fluoride fluxes are available.

The use of anticorrosive lubricating oils for rock drills is receiving considerable attention abroad.

The U. S. Bureau of Mines has developed a pneumatic vibrating-blade long-face planer for western phosphate mining. The machine consists of five paving breakers mounted one above the other so that the chisels enter the face at an acute angle. Planer travel is along the dip approximately at right angles to the strike of the bed. Some field tests were completed last year, and more extensive tests are planned for 1955.

The use of large-diameter rotary auger-type drills for recovery of coal continues in popularity. In Germany 9-inch diameter augers are used for deep-face penetration from underground workings. In Armstrong County, Pennsylvania holes are being drilled to a depth of 196 feet and 40 tons of coal is produced per hole.

Methods for control of rotation on upstroke or downstroke of pneumatic drills was the subject of an interesting study. Rifle bar and other parts for reversing rotation may soon become standard equipment.

A very comprehensive file of data on rock bolting has accumulated in the literature during the past year. The U. S. Bureau of Mines and a number of the equipment manufacturers have recently issued very useful guides to approved rock-bolting practice. The Bureau of Mines has developed new techniques for measuring the efficiency of rock bolts under various operating conditions. Report of Investigations 5040 describes the methods used. Information Circular 7678, which was also issued last year, brings up-to-date five years of experience with rock bolting in the coal and iron mines of Alabama.

An unusual application of rock bolts and metal lath to replace conventional timbering was reported in the sinking of a shaft at the Stansbury Colliery in Wyoming.

From South Africa we have received reports of a successful ore loader which is powered by electricity instead of the conventional compressed air. A single squirrel-cage A.C. motor operates the entire machine.

The Hendrix Mine of Consolidated Coal Company in Kentucky reports that with a modified Joy 14 B.U. loader that an average of 42 tons of coal per man shift has been maintained in a 42-inch seam.

Notable advances in caving practice are being developed at Climax Molybdenum Company under their new production schedule of 28,000 tons of ore per day. The large-scale block caving operation at the Jeffrey Asbestos mine in Canada is presenting problems in under-cutting and slusher drift development.

Mine haulage reached a new high last year when a 50-ton, 600-horsepower underground locomotive went into service in a Pennsylvania coal mine. This locomotive can pull 1,600 tons or 110 loaded coal cars on a level track.

The more general use of A.C. power was noticed in underground mines during the past year. Portable load centers for transforming 2,400 or 4,160 volts to 480 have capacities of from 45 to 500 kva. These units have a maximum height of 42 inches and a width of 55 inches.

The use of aluminum mine cars for coal haulage was reported. More general use of liquid ballast instead of air is reported in underground pneumatic-tired equipment. Experimental use of barite-loaded tires is also reported.

The first underground electric trolley haulage system in a safety lamp mine is reported from England during 1954.

The U. S. Bureau of Mines in Report of Investigations 5050 reports on a new method for measurement of the flaming and burning of explosives. This investigation ties in closely with a study of the mechanism of ignition of firedamp by explosives which is reported in Report of Investigations 5049.

### OPEN PIT MINING

Just a few years ago many mining men were of the opinion that further size increases in open pit mining equipment would be limited because of loss of maneuverability. Development in 1954 proved that the size peaks have not yet been reached in drilling, loading, and transportation units. Churn drilling continues to be the favorite method of drilling large bore holes in United States' open pit mines. Rotary-percussion drills and high-frequency drills for large-diameter holes were the sub-

ject of extensive field testing during the past year.

What is probably the world's largest stripping shovel was introduced in 1954. This machine is capable of taking a 100-ton bite of rock at a single pass. It is as high as a 12-story office building. Its 14 operating motors have a total capacity of 7,500 horsepower. Two large motor-generators which are mounted on the shovel provide D.C. power for the machine. A modified amphi-stat-amplidyne control system provides a flexibility of control equal to that of much smaller machines. As impressive as these measurements may be, there is nothing to indicate now that the ultimate in stripping shovel size has been reached.

Haulage equipment development kept pace with loading equipment in the past year. The AAFD Euclid combines a 34 ton payload capacity with remarkable maneuverability and ease of operation. This unit is powered with two Cummins Diesel engines. The engines are mounted side by side, and each drives one of the two rear axles. Ease of operation is obtained by power steering, elimination of all manual gear shifting, and complete power braking. Top speed with full payload of 68,000 pounds is close to 30 miles per hour.

A comparative study of the cost of rock breaking with explosives in rock quarries with crushing costs was started in 1954. Preliminary indications point to possible economies through further size reduction by secondary blasting in the quarry.

Two interesting innovations are reported from the huge Nevada contract operations of Isabell Construction Company for the Kennecott Copper Corporation and Consolidated Copper Mines Corporation. Excellent stemming results are reported in their large-diameter drill holes. The bed of a Ford F-8 dump truck was fish-tailed and equipped with a grizzly for separation of fines and coarser rock.

The use of a Euclid truck with a standard railroad drawbar mounted on the front bumper for switching railroad cars at the tippie is said to be very satisfactory.

A further study has been made of the possibility of premature open pit blasts being detonated by radio waves. The Institute of Makers of Explosives during the past year completed an extensive study of this problem. One accident of record appears traceable to short wave length radio waves detonating a blasting cap. At this time all evidence indicates that this source of power is too low in magnitude to explode a detonating cap except under very unusual circumstances.

### MATERIALS HANDLING AND CRUSHING

Belt conveyor progress during 1954 was probably most outstanding in some of the new shipside ore-handling installations. For tonnage rates, automatic control, and ingenuity of design, some of these conveying systems have set new records.

An example is the iron-ore installation at Puerto Ordaz in Venezuela. Here an integrated conveying, crushing and bedding system is presently handling iron ore at a rate of 3,000 tons per hour. The ultimate capacity of the system is 6,000 tons per hour or 100 tons per minute. Combining this capacity with the flexibility and interlocking controls necessary for serving ships represents a major engineering achievement.

Unloading facilities for ore-carrying ships that were completed in 1954 are also notable. A Pennsylvania Railroad installation on the Delaware River consists of two high-capacity unloading machines mounted on a concrete pier. This facility can transfer ore from ships to railroad cars at the rate of 3,600 tons per hour.

The Canton Pier at Baltimore has what is perhaps the largest single unloading unit which will handle in one tower a maximum of 1,900 tons per hour. A bucket hoisting speed of 420 feet per minute is reported from this installation.

Improvements in bucket design have resulted in higher closing speeds and better rope life. The importance of specialized bucket design for various types of commodities and for use where space limitations exist has been more generally recognized as a design problem. Some particularly weird bucket designs have been reported from Soviet-dominated countries.

From the standpoint of unusual length, there were two important conveyor installations completed last year. The new Potash Company of America's conveyor system in the Carlsbad New Mexico district transports ore 7.5 miles underground. A surface conveyor recently completed in Ohio delivers coal at the rate of 800 tons an hour over a cross country course of well over four miles.

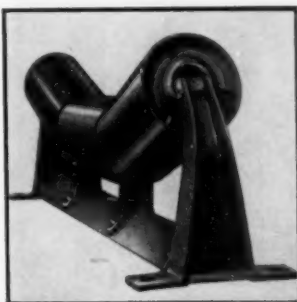
A novel conveyor installation is reported from the West Rand in Africa. It is a single unit transporting ore over a mile from the Doornfontein No. 1 shaft to the mill. The carrying belt rests in the valley formed by two parallel steel cables. The belt itself is of fairly light construction, single-ply 32 ounce  
(Continued on page 46)

# GENERAL SUPPLIES

## Blue Ribbon Equipment Developments for 1955



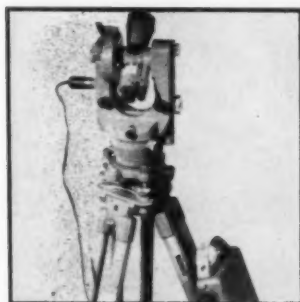
**SEMI-AUTOMATIC HARD-FACING** with fabricated tubular wires containing alloys was developed by the Steady Co. Normal deposit speed is 10-15 pounds per hour at 300-400 amps. Manganese, medium alloy, and high alloy wires are now available. Circle No. 46 on the reader inquiry card.



**JEFFREY PERMA-SEAL IDLER**, developed by The Jeffery Manufacturing Co., is a 20° troughing idler whose leading feature is a double flexible contact seal which keeps dirt out and belt-damaging grease in, for the entire life of the idler. Circle No. 47 on the reader inquiry card.



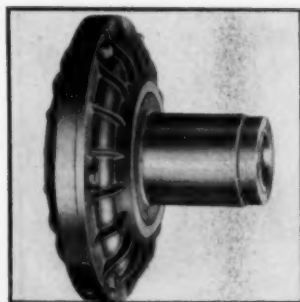
**ALLIGATOR V-BELT FASTENERS**, manufactured by the Flexible Steel Lacing Co., have a nylon bushing substituted for the steel bushing. This reduces the weight of the fastener, helps absorb shocks, and adds the wear-resistant qualities of nylon. Circle No. 48 on the reader inquiry card.



**OPTICAL REPEATING TRANSIT**, offered by Wild Heerbrugg Instruments Inc., features internal optical readings for both circles, and a built-in optical plummet. Mining attachments include a 90° pentagonal objective prism for shaft plumbing. Circle No. 49 on the reader inquiry card.



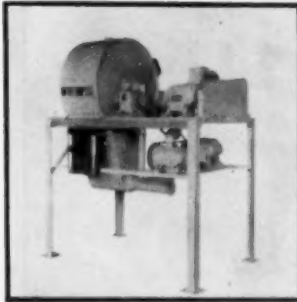
**RING-TITE** is the name of a recently developed coupling which Johns-Manville is now producing for use with Transite pipe. It can radically cut down installation time since it automatically centers, aligns, and provides for expansion. Circle No. 50 on the reader inquiry card.



**A NEW DRY FLUID DRIVE** handles difficult starting and reversing problems. Dodge Manufacturing Corp. says that Flexidyne gives a new kind of protection against shock and overload on a variety of industrial drives involving heavy inertia. Circle No. 51 on the reader inquiry card.



**ROBINTRONIC LEVEL INDICATOR** uses an electronic signaling device to prevent accidental overfilling or emptying of storage bins. Developed by Hewitt-Robins Inc., it has no moving parts to jam, rust, corrode, or require lubrication. Circle No. 52 on the reader inquiry card.



**"POCKET-SIZE" DUST COLLECTOR**, Model D offered by Turner & Haws Engineering combines high-efficiency filtering and reverse-air-jet filter cleaning with great compactness in small areas having heavy dust concentrations. 500-7200 CFM. Circle No. 53 on the reader inquiry card.



**NEW CONVEYOR BELTING** known as Super Ustex-Nylon, a U.S. Rubber Co. development, utilizes new type of cellulosic yarn which is treated chemically for exceptional strength. It permits one haulage on a continuous single belt three miles long. Circle No. 54 on the reader inquiry card.

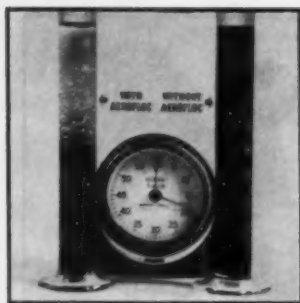


# ORE TREATMENT

## Blue Ribbon Equipment Developments for 1955



**EIMCO-BURWELL FILTER** now marketed by Eimco Corporation is designed with 2 plates back to back, one male and one female, acting as platens between frames. The new filter brings automation to an old established method of filtration. Circle No. 55 on the reader inquiry card.



**NEW AEROFLOC REAGENTS** sold by American Cyanamid Company are synthetic polymers which improve settling and filtration rates of ore suspensions. They function by flocculating finely-divided particles into large flocs which settle rapidly. Circle No. 56 on the reader inquiry card.



**NEW CONCEPT OF CLASSIFICATION** was developed in the Denver-Finney belt classifier made by Denver Equipment Company. The lower end of the belt is troughed to form a pool, and sands which settle are conveyed on the belt for rehandling. Circle No. 57 on the reader inquiry card.



**NEW HMS VESSEL** combines exceptional simplicity with high efficiency. Rakes remove the sink without disturbing the pool. Ore & Chemical Corp. point out that the power consumption is very low, and that little head room is required. Circle No. 58 on the reader inquiry card.



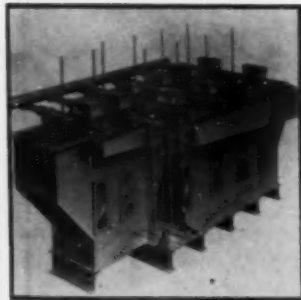
**REMER DA CONCENTRATOR** is a new differential acceleration jig developed on the Mesabi Range to concentrate minus- $\frac{1}{4}$ -inch iron ore. It is also used for Alabama iron ore and for sand and gravel plants. Three Minnesota and one Alabama mill use it. Circle No. 59 on the reader inquiry card.



**PERMANENT MAGNETIC SEPARATOR** built by A/S Thoms Mek. Vaerksted is a double drum unit, each drum containing three Alnico magnets. Lower first cost is an important advantage because of the simple construction of the separator. Circle No. 60 on the reader inquiry card.



**OVERHEAD ECCENTRIC JAW CRUSHER** made by Pioneer Engineering Works is the world's largest, rated at over 600 tph at a 13 inch setting. The base of the 42 by 48 inch crusher as well as the jaw plates are split to facilitate installation. Circle No. 61 on the reader inquiry card.



**DORRICO JET SIZER** is a hydraulic classifier based on hindered settling principle. Water distribution through a system of horizontal pipes eliminates the costly constriction plate construction of previous Dorr-Oliver Inc. units. Circle No. 62 on the reader inquiry card.

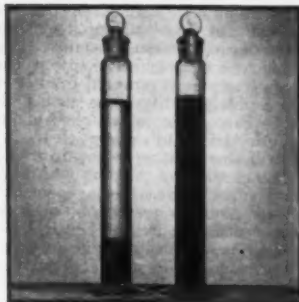


**TORQUE FLOW SOLIDS PUMP** just announced by Wemco contains a recessed impeller which sets up a torque and swirl action in the chamber. Since impeller is out of the line of pulp flow, wear is minimized and binding or clogging reduced. Circle No. 63 on the reader inquiry card.



# ORE TREATMENT

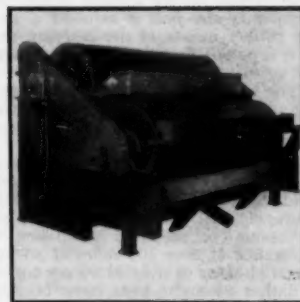
## Blue Ribbon Equipment Developments for 1955



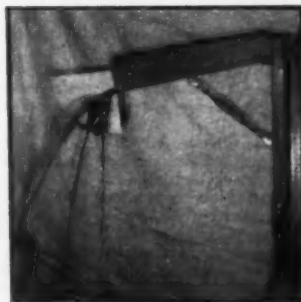
**SEPARAN 2610** is a new flocculating agent developed by Dow Chemical which has helped speed filtration and settling problems. It is a synthetic polymer which may lead to a reduction in filter or settling area needed for separation.  
Circle No. 52 on the reader inquiry card.



**SHEPPARD'S CONTINUOUS** casting machine, distributed by C. Tennant, Sons & Co., has permitted first successful mechanical pouring of zinc ingots. Ripples are eliminated through the use of a variable speed heater drive unit on the machine.  
Circle No. 53 on the reader inquiry card.



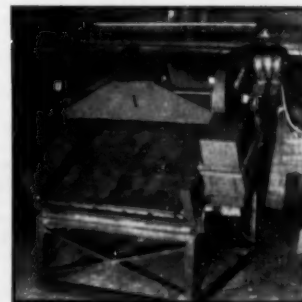
**DING'S DOUBLE DRUM** wet magnetic separator have made savings possible by development of permanent magnetic assemblies. Losses due to power failure have been prevented; incorporation of two units in the same frame saves space.  
Circle No. 54 on the reader inquiry card.



**FANNING CONCENTRATOR** works on gravity principle. Developed by Corpeo Engineering and Manufacturing, pulp flows down the inclined trough to the fan shaped baffle where it is split by wedges. Ore is upgraded in one or more stages.  
Circle No. 55 on the reader inquiry card.



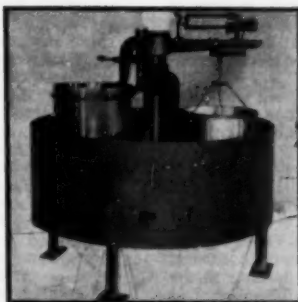
**HARDINGE GYRATOR AIR CLASSIFIER** for closed circuit dry grinding operations has a wide range of fineness control. Oversize is removed by impact of rotor blades on the dust stream entering at the bottom and returned for regrinding.  
Circle No. 56 on the reader inquiry card.



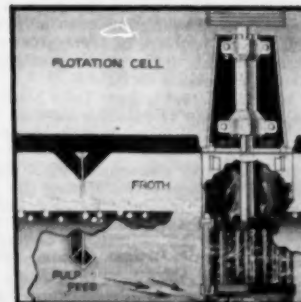
**JACKET HEATER** of Deister Concentrator Co.'s Leaky vibrating screen provides freedom from blinding. Hooked-end screen panels make jacket mounting simple. Heating transformer and bus-bar connections are insulated from frame.  
Circle No. 57 on the reader inquiry card.



**NEW HREBS CYCLONES** available through Equipment Engineers feature adjustable inlet size, vortex size and apex valve for operating control. The cyclone is lined with moulded pure gum rubber, and long sweep inlet reduces wear problems.  
Circle No. 58 on the reader inquiry card.



**HOLMES FLOAT-SINK TESTER** can be used to check the operation of gravity separation equipment by determining sink float ratio. Testing is quick and easy, thus proper adjustment of concentration equipment for peak results can be made.  
Circle No. 59 on the reader inquiry card.



**GUARTEC** brings General Mills into the ore dressing field. This new reagent is used as a flocculant to speed settling and filtration. In flotation it is said to depress certain gangues and slimes. It is derived by milling guar beans.  
Circle No. 60 on the reader inquiry card.

## Technological Advances

duck. Into the belt are molded spring-steel straps on 30-inch centers. These extend beyond the edges of the belt for a few inches and carrying shoes are attached to these projections. Rubber inserts are fitted to the top and bottom of these shoes. These ride directly on the surface of the carrying ropes. As a load is applied to the belt it assumes a troughed cross section, and the rubber inserts in the carrying shoes firmly grip the ropes. It is reported that there is no slippage between the shoes and the rope.

The ropes are driven by two Koepe driving pulleys with an ingenious differential gearing to insure equal speed for both ropes even though wear might cause a difference in diameter of the driving sheaves.

For several years the U. S. Bureau of Mines has been conducting tests on a mile-long section of pipeline for transporting fluidized coal. The results of this test work have been so encouraging that plans are now being made for a commercial installation. The proposed installation will pump 1/2-inch coal for a distance of over 100 miles at an anticipated saving in transportation costs of over \$1.00 per ton.

Rather extensive tests have been run during the past year in this country with impact crushers to determine limits in reduction of undesirable fines. High labor maintenance costs appear to limit the application of the impact crusher to non-siliceous ore. Reports from some foreign countries where labor to material ratios are lower indicate that improved crusher efficiency may justify the high percentage of down time and high maintenance labor requirements.

### ORE PROCESSING

Developments in the field of ore treatment in 1954 emphasize one important point. It is simply that the ore being treated is far more important than any consideration of the theoretically best way to perform a unit operation. The developments of 1954 seem to emphasize the basic requirement of fitting the process to the ore, rather than trying to make the ore fit a process.

For example, not too many years ago, we were prone to believe that the theoretical advantages of multiple stage grinding would lead to a series of rod mills and ball mills in various combinations with classifiers in every important new installation. Instead, we find the trend toward single stage grinding. We also find evidence that flotation may not be the panacea for all concentrating problems. Numerous developments during the past year indicate that a close look at gravity possibilities may be well worth while. The old work horse of a generation ago, the concentrating table, has recently shown that it can still be very useful in a modern flow sheet.

As operating cost analyses are carefully studied, it becomes apparent that cyclone classification may be very practical for sizing one specific ore, but very impractical for a similar application on a different ore. Current milling emphasis, in the research laboratory and in the operating plant, is definitely on the properties of the ore.

The important grinding installations of the past year in this country were the large single stage ball mill units in the new copper concentrators. These installations with their intricate operating control systems will undoubtedly establish new records for capacity and low operating costs.

Interesting contributions were made in the field of dry grinding during 1954. Studies within the ceramic industry produced valuable data on the relation of the specific gravity of non-ferrous grinding media to mill capacity and to liner wear. The general problem of segregation of component minerals and aggregate sizes in the grinding of ceramic bodies received considerable attention in 1954.

Mr. B. S. Crocker from Lake Shore Mines Limited continued his contribution of valuable data on the comparison of pebbles and steel balls for grinding the ore from this famous Canadian mine.

Investigations concerned with the mechanics of grinding media wear were active during the year. R. T. Hukki of the Finnish State Institute for Technical Research presented a series of equations for mechanical ball wear, relating parameters of ball size, mill speed, and mill diameter. Other studies were made of the actual movement of individual balls to account for wear characteristics. Fred Bond's usual contributions to the problems of comminution included a very useful summary of crushing and grinding calculations.

Additional data have been obtained on the effect of temperature in grinding operations. Practical operating limits may preclude utilization of this important factor in most conventional ore grinding installations. There is evidence to point to the usefulness and practicability of elevated temperatures in special grinding problems.

The interest in cyclonic classification as a substitute for mechanical classification appears to be centered in South Africa. The new United States' copper installations appear to be content to go along with mechanical classification. In these particular plants the higher initial cost and larger space requirements of the mechanical installations appear justified in the lower operating costs of the conventional rake and spiral classifiers.

Proponents of cyclonic classification claim greater selectivity in grinding circuits using this type of sizing. The screen analyses and assays of these screen fractions as reported from several of the African installations certainly justify these claims. It is reported that of the Orange Free State mines of the Anglo American Corporation of South Africa Ltd's group, all the mills either incorporate now, or will shortly incorporate, hydroclone classifiers. These mills report that selective grinding with hydroclone classifiers in the milling circuit offers advantages for either gravity concentration or cyanidation, by reason of the greater release of the mineral constituents. The mill at South African Land and Exploration Co., Ltd. is said to be replacing existing mechanical classifiers with cyclones. The mill at Vaal Reefs Exploration and Mining Co., Ltd. will also incorporate hydroclone classifiers. West Rand Consolidated Mines, Ltd. reports that in its final classification circuit, cyclone classifiers will replace bowl classifiers.

Of particular interest in the ceramic field is the development of small multi-unit cyclones which are capable of accurate sizing in the 2 to 20 micron size range.

The Model EE two stage cyclone of Equipment Engineers Inc. represents a new development in which the conventional conical unit is replaced with a straight cylinder. Pilot plant reports of this unit indicate higher capacity, better classification and less wear is to be expected with the cylindrical classifier.

An excellent commentary on "The Current Status of the Cyclone as a New Classification Tool" appeared in the April 1954 issue of MINING WORLD in an article by A. T. Fisher and R. D. Forger. This article discusses operational variables and cost comparisons.

T. R. Naylor in *Mining Magazine* observes that the hydroclone will gradually replace mechanical classifiers in the medium and fine size range. He says this is inevitable in the minus-150-micron size range.

A travelling belt classifier has satisfactorily completed its preliminary testing under pilot mill conditions and is now being tested under sustained continuous operation.

The electrical heating of screen cloth continued to hold the interest of those concerned with dry or "near-dry" screening. At least one new product was made available in this field during 1954. The Deister Concentrator Company has announced its new FlexFlex screen heating system. Recent tests with this device indicate lowered power consumption.

Discussion of new concentrator installations in 1954 appear in the specific commodity reviews, and in the state and country summaries elsewhere in this issue of MINING WORLD. Process and equipment developments in the field of ore concentration were not outstanding during the past year.

A renewed interest in gravity methods was evident. In South Africa the successful development of a continuous riffle concentrator belt is reported. This machine uses a belt five feet wide with nine feet of useful top surface. The belt surface is adjustable in a horizontal plane, and the belt travel is counter current to the pulp flow.

Numerous new applications of the spiral concentrator were reported. These include some Australian installations where the spirals were constructed of concrete. Improvements in spiral design have contributed to increased selectivity of this interesting concentrating tool. Extremely high purity is attained in the concentration of zircon and rutile.

In the May 1954 issue of MINING WORLD the use of tables to reduce lead sliming was described. This installation at San Francisco Mines of Mexico, Ltd. is an interesting illustration of a combination of flotation and gravity methods used together to increase overall plant efficiency.

The successful combination of gravity and flotation methods in the concentration of Brazilian phosphate is described in U. S. Bureau of Mines Report of Investigations 5078 which was issued in September 1954. The proposed plant near Recife in the State of Pernambuco will produce 500,000 tons of concentrate annually. Another phosphate plant employing a combination of concentration methods developed in an American research laboratory was completed in Pretoria, South Africa last year.

An excellent account of progress that has been made in the separation of calcite from phosphate rock in the Moroccan deposits appeared in the March 1954 *Revue de l'Industrie Minérale*. The problem of upgrading the phosphate ores of the western United States was the subject of considerable research during

## Technological Advances

1954. Definite progress is reported in this field and important announcements may be expected in 1955.

A number of equipment improvements in the heavy media field were reported in 1954. Among these is the new separating vessel and system announced by The Ore and Chemical Co. of New York. Operating details of the heavy media plant at Uruwira Minerals Ltd's new mill were described in the January 1954 issue of MINING WORLD.

The U. S. Bureau of Mines is continuing the study of the difficult problem of making United States manganese ores economically useful to our steel industry. Report of Investigation 5022 describes concentration studies of the oxide and silicate manganese ores from the vicinity of Winnemucca, Nevada.

Flotation interest in 1954 seemed to center on reagents. No equipment improvements of importance were noted.

A few years ago, a very popular brand of frother was rather suddenly removed from the market. This reagent was essentially a mixture of two readily available alcohols. This frother also contained a minor amount of unidentified ketones. These ketones were considered unimportant until a number of operators experienced recovery difficulties when they substituted the alcohols and ignored the ketones. This incident, as well as others, has created a lively interest in the collecting properties of frothers. *Mine and Quarry Engineering* reports the result of an interesting study of the mechanics of frother operation.

Important contributions to basic problems in flotation resulted from what has been called the first "World Congress on Detergence and Surface-Active Agents." This meeting which was held at the Sorbonne last Fall included a section headed "Mines and Ores". Professor A. M. Gaudin was chairman for the session dealing with flotation. This Congress concluded that there is still a great deal of scope for investigation into the complex adsorption phenomena observed at solid-liquid and liquid-gas interfaces. The Congress strongly recommended closer cooperation between the users and makers of surface-active agents used in the mineral dressing field. It was felt that a better understanding of the requirements could result in "tailor-made" products for specific applications. The use of surface-active agents for the suppression of dust in crushing plants and in mines was an interesting topic of discussion at this meeting.

Progress was reported in 1954 in the flotation of oxidized zinc ores with fatty amines. Similar progress was reported in the flotation of oxidized ores of copper and lead.

An interesting problem in sorting as a pre-milling procedure is described in an English publication. The following is quoted from the December 17, 1954 issue of *The Mining Journal* (London). "This question of reef sorting is most important in the case of properties exploiting the Vaal and Basal Reefs which are not as friable as the carbon leader. The actual gold bearing horizons are extremely narrow—often being 6 inches in width or less. At the same time, average stoping widths are of the order of 40 inches. In consequence, there is a very large quantity of waste reaching the mill. Furthermore, the reef horizon is not easily identified as in the case of the reefs of the Central Rand where the pebble formation and very distinct parting make hand-sorting of waste a simple procedure which can be carried out by relatively unskilled labour.

"The approach now being made to the problem is towards the use of some electronic device. Gold and uranium are intimately associated in the Vaal and Basal Reefs and rock displaying no radioactivity is barren. Some work has been done using a form of Geiger counter to activate mechanical hands or a similar device to separate payable material from waste.

"Should this prove successful, the new mines will undoubtedly benefit considerably, with possibly a very high proportion of waste being eliminated before reaching the milling circuits. It has been suggested in one quarter that the position could be easily reached where a reduction plant with a monthly capacity of 100,000 tons could produce at least as much gold as a 300,000-ton mine under present conditions."

The preconcentration of low grade Colorado Plateau uranium ores prior to leaching continues to be an active problem. This problem appears to hinge on making a tailing low enough in uranium to be acceptable to the United States Atomic Energy Commission. It seems inevitable that the large number of projects now active on this problem will produce interesting results in 1955.

Thickening and dewatering developments last year were centered in the new flocculating agents and filter aids which were made available. The unusual properties of Dow Chemical's new "Separan" has created wide interest. Further progress was reported in the application of ultrasonic energy in the settling of Florida phosphate slimes. The use of magnetic filters for dewatering fine magnetic particles was described in an article from Sweden and also from an industrial research project at the Colorado School of Mines Research Foundation.

As in past years, sintering and agglomeration of iron ore fines was the subject of intensive research. A review of the Swedish pelletizing problem which appeared in the *Journal of the Iron and Steel Institute* describes the influence of various additives on the properties of pellets. It also discusses the development of a shaft furnace process. A British vacuum extrusion pelletizing process development was described in this same publication. Both British and Swedish efforts are being concentrated on removal of sulphur from the pellets. Another British investigation has been centered on a study of the crystalline structure of both the matrix and the cementing material in various sintered products.

In this country, R. L. Bennet, R. E. Hagen, and M. V. Mielke have presented the nodulizing picture of Extaca near Virginia, Minnesota in a comprehensive A.I.M.E. paper. Operating data, statistics and other features involved in nodulizing ore fines and taconite concentrates are described.

The extreme flexibility of a fluosolids for roasting sulphide concentrates has been described by "Buck" Keil in his very interesting account of operations at Golden Cycle Corporation's new Carlton mill at Cripple Creek, Colorado.

### LABORATORY AND CONTROL METHODS AND EQUIPMENT

The trend toward freeing men from routine control tasks was apparent in new developments in both laboratory and mill equipment in 1954. The availability of improved equipment that is better adapted to mineral industry needs has created a renewed interest in automatic mill control.

Automatic control of such factors as density, pH, viscosity, feed rates and other variables has long been taken for granted in many chemical-industry installations. Methods and equipment that did the job for the chemical industry could seldom be successfully used in small or medium-sized ore-dressing plants where variations in mill feed and preliminary preparation practice were too great.

It is true that automatic control is most effective where all elements of an operation are maintained within reasonable limits. We all know that ore bodies are seldom as uniform in grade as petroleum from a given field, or the seawater that provides the feed to a magnesium plant. On the other hand, much can be done both in the mine and at the treatment plant to provide more uniform feed to the concentrator section. The control of pulp temperature and uniformity of mill water is receiving more attention. The "Densi-O-Meter" is a new device employing a nuclear-electronic system for pulp density measurement and control. Minneapolis-Honeywell Regulator Company has completed a series of tests on a new and simple device for density measurement and regulation. This equipment is now being field-tested with most promising indications for success.

Automatic pH control equipment has been improved and is available in more rugged construction for mineral dressing plant installations. Remote indication and automatic control of reagents to correct pH variations can correct conditions in a mill circuit long before they are visually apparent to even a watchful and alert operator.

The effect of soluble constituents in an ore on the viscosity of the pulp has frequently been overlooked in milling calculations. Viscosity measurements provide another possibility for automatic control. The development of non-plugging and non-fouling instruments capable of measuring and recording viscosity of pulps containing a high percentage of suspended solids is very close to being a practical reality. An interesting development announced in this field during the past year employs ultrasonic vibrations in the pulp to measure viscosity.

Transparency measurements for rapid estimation of mill product purity was the subject of an interesting investigation by Dr. S. C. Sun during 1954.

The more extensive use of automatic controls in milling operations ties in closely with the development of more rapid methods of laboratory analysis of products. The ultimate goal of automatic and continuous sampling of mill heads and products is still a dream, but progress in this direction is reported.

Continuous measurement of the potassium content of brines and potash pulps by radiometric counting of potassium "40" may well lead to automatic control of feed rates, reagents, and many other control factors in a modern potash refinery. Progress in instrumental analysis for a number of elements promises more prompt reporting of data from the laboratory to the mill. Recent improvements in the recording spectrophotometer have greatly expanded the field for this instrument in the quantitative analytical laboratory.

In spite of the many developments in the field of automatic control, there are still many hurdles to conquer before computer control takes over the manual adjustment of control-instrument settings from the mill operator.



# METALS & MINERALS IN REVIEW



## ALUMINUM



By KEEN JOHNSON  
Vice President  
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The United States primary aluminum producers wound up 1954 with two production records. December was an all-time record month, with a production of 127,056 tons, and the total for the

year also set a new high, of 1,460,587 tons. This was the third successive year that a new output record had been achieved. Production in 1954 was 17 percent more than in 1953 when 1,252,013 tons were produced.

The year 1954 marked the completion of the expansion of primary capacity begun during the Korean War by the present primary producers. Anaconda Aluminum Company's 60,000 ton facility is the only primary producing plant now under construction and it is expected to be producing primary aluminum around the middle of 1955. As a result of this expansion by the present producers, annual primary production in 1954 has doubled the 1950 annual rate of production of 718,627 tons.

Bauxite mining increased along with the growth of the primary aluminum industry. Domestic mine production, chiefly in Arkansas, increased 20 percent from 1,580,000 tons in 1953 to 1,900,000 tons in 1954. Imports of bauxite showed a similar rise, from 4,389,000 tons in 1953 to 5,300,000 tons in 1954. Imported bauxite in 1954 accounted for 74 percent of total United States supply.

Surinam is still the principal foreign source of United States bauxite imports. Although imports from Surinam were slightly higher in 1954 than in 1953, its relative position declined during the past year. In 1952 and 1953 Surinam provided 75 percent of total United States imports, but in 1954 it probably accounted for only 60 percent of this country's bauxite imports.

The importance of Jamaica and British Guiana as sources of bauxite for the domestic aluminum industry increased during 1954. Imports during the first three quarters of 1954 were more than double the imports for the same period in 1953. Active development of the bauxite deposits in Haiti continued during the year.

A significant feature of 1954 operation was the blended use of high grade imported bauxite and low grade domestic ore in the process of making alumina. This blending of high grade

imports with certain low grade domestic ores has made it possible to use a broader range of domestic ores and to increase the reserves of commercially usable domestic reserves.

The quick recovery of the aluminum industry since the second half of 1953 is indicated by aluminum shipments during 1954, especially those to civilian markets. Total aluminum shipments as estimated by the United States Department of Commerce were 1,450,000 tons, about 150,000 tons less than in 1953, a record year. But this decline in total shipments was entirely the result of a 57 percent cut in defense shipments, from 350,000 tons in 1953 to 150,000 tons in 1954. Civilian shipments, however, rose to a new record level of 1,300,000 tons, 50,000 tons more than in 1953. Civilian markets also took a larger share of the total aluminum shipped. In 1952 shipments to civilian markets were 70 percent of total aluminum shipments. In 1954 civilian shipments rose to 90 percent of total aluminum shipments. This large civilian consumption occurred partly because 1954 was the first full year the aluminum industry had adequate domestic supplies to meet the civilian market requirements and also it was the first full year that civilian usage of aluminum was not restricted by government controls.

## ANTIMONY



By JAMES P. BRADLEY  
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Bradley Mining Company  
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During 1954, United States imports and total consumption of primary antimony declined about 23 percent, as shown in Table No. I. The consumption of antimony in nonmetal products

(mainly in the form of antimony oxide) accounted for over half the total primary antimony consumption and was off about 10 percent, whereas the consumption in metal products was off about 33 percent.

The prices of antimony metal, ore and oxide strengthened in 1954 (see Table No. II).

Domestic mine production (mainly the byproduct output of the Sunshine Mining Company, Kellogg, Idaho) amounted to less than 7 percent of U. S. primary consumption in 1954. The Bradley Mining Co.'s Yellow Pine mine and smelter at



Table No. II  
Prices For Antimony Products By Grades During 1954

Time	Foreign Antimony Metal Duty Paid, New York (per pound)	Antimony Oxide Duty Paid (per pound)	Antimony Ore, New York (per short ton unit)		
			50-55%	55-60%	60-65%
First of 1954	25¢-26.5¢	26¢	\$2.55-\$2.65	\$2.80-\$3.00	\$3.50-\$3.60
End of 1954	26¢-28.5¢	29¢	\$2.80-\$3.00	\$3.00-\$3.20	\$4.00-\$4.20

Stibnite, Idaho (formerly the principal domestic producer) has not resumed production since its shutdown in mid-1952. However, exploration work is continuing under contract with the DMEA and on company account at the Yellow Pine mine and the laboratory output of high purity (99.99+ percent) antimony metal has been expanded to take care of a growing demand for this product from research organizations in this country and abroad.

United States imports of primary antimony during 1954 came from the following countries (in the order of importance): Mexico, Bolivia, United Kingdom, Belgium-Luxembourg, Yugoslavia, Peru, West Germany, Chile, Union of South Africa, Netherlands, Canada and France. As in previous years, over half of the 1954 primary antimony imports was in the form of duty-free ores and concentrates.

Table No. I  
Antimony Industry in United States in 1953 and 1954  
As Reflected By Trade In Short Ton Units<sup>1</sup>

	1953	1954
Imports:		
Ore	7,778	4,658
Metal	2,627	2,826
Oxide	1,076	1,228
Sulfide	11	23
Total imports	11,492	8,735
Domestic mine production	370	800
Consumption	14,300	11,100 <sup>2</sup>
Industrial stocks, end of period	6,900	7,200

1. From U. S. Bureau of Mines.  
2. Estimate.

There has been an increasing interest, on a world-wide basis, in the investigations of the antimony intermetallic semiconductor compounds and a large potential use for the aluminum-antimony and indium-antimony compounds as indicated in new types of electronic devices, such as rectifiers, resistors, amplifiers, "solar batteries," etc.

Antimony was included in two important government announcements dealing with metals in 1954. In March, 1954, antimony was reinstated on the DMEA's list of materials eligible for exploration loans. In September, 1954, the ODM announced that antimony was to be purchased on the open market from domestic sources for the "long term" stockpile and also that antimony was on the suggested list of commodities to be obtained from foreign sources for the "supplemental" stockpile through the use of foreign currencies that may be acquired from the sale of surplus agricultural products. There are no reports of any stockpile purchases of antimony having been made to date under either the "long term" or "supplemental" programs.

## BERYLLIUM



By Dr. H. HERSHBERGER  
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Brush Beryllium Company  
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The new supply of the industry's ore, beryl, for 1954 was less than that for 1953 by 28 percent. However, its size has been surpassed in only two years.

This decrease was caused by a decline in consumption of the ore of approximately 15 percent to some 2,200 short tons for the year. The excess of supply over demand depressed market prices from \$46 to \$39 per

short ton unit of contained beryllium oxide. On July 12, 1954, the United States government officially recognized the more than adequate supply and removed beryl from the "most critical" category of materials.

The reduced rate of ore consumption was due primarily to the general decline in the non-ferrous metal business and secondarily to the drop in production of pure beryllium metal. This trend was reversed near the end of 1954.

New uses for beryllium copper are increasing in number, probably due to the improved ore supply which has been demonstrated over the past six years. It may be estimated that the total stocks of delivered beryl in the United States amounted to 24,000 tons at the year end. Investigation of the use of beryllium in alloying with other metals is proceeding and the interest in the pure metal in the nuclear energy field is continuing. These uses are still experimental in scope and constitute potential future consumption, rather than having any substantial effect upon the present supply.

Considering presently foreseeable factors, consumption of beryl in the neighborhood of 3,000 tons seems to be indicated for 1955, a considerable improvement over last year. In all probability, the General Services Administration will occasionally step into the market and thus support a reasonable rate of beryl production and industry will want to maintain a sound inventory of ore. Therefore, it may be reasonably expected that the new supply of beryl for 1955 can be between 6,000 and 6,500 tons.

It will be noticed in the accompanying table that the supply originates in an increasing number of countries. From time to

United States Receipts of Beryl, in Short Tons  
by Countries of Origin for 1951, 1952, 1953 and 1954<sup>1</sup>

Country of Origin	1951	1952	1953	1954 <sup>1</sup>
Afghanistan	0	0	0	11
Argentina	0	\$50	1,511	0
Belgian Congo	0	0	0	11
Brazil	1,094	2,590	2,696	1,828
British East Africa	48	18	22	22
Finland	5	3	0	0
French Morocco	23	118	21	0
India	449	196	206	391
Korea	0	3	8	4
Madagascar	0	0	331	77
Mozambique	174	308	410	1,295
Portugal	98	105	363	338
Rhodesia and Nyasaland	601	931	1,296	957
Surinam	0	0	0	10
Sweden	0	0	0	5
Union of South Africa	1,722	1,156	1,341	865
United States of America	488	515	751	600
Others	12	—	—	—
TOTALS	4,799	6,493	8,954	6,414

<sup>1</sup> Preliminary

time, new discoveries are reported so that estimated reserves of hand-cobbed beryl are increasing rather than diminishing as the ore is mined. Nevertheless, in the long run, the development of an economical beneficiation process for making beryl concentrates is essential to the substantial expansion of this industry which can be envisaged.

## COBALT

For the fifth consecutive year, free world production of cobalt increased, establishing a new all-time high. An estimated 29,000,000 pounds were produced in 1954, an increase of about seven percent over that of 1953.

The leading cobalt producing countries were Belgian Congo, Canada, Northern Rhodesia, French Morocco, and the United States. For foreign production figures, see the individual countries in other sections of this yearbook.

Production of cobalt metal in the United States amounted to 2,805,258 pounds in 1954, as compared with 2,887,487 pounds in 1953, a decrease of 0.5 percent.

The United States government stockpile continued to be the main cobalt consumer. Imports of cobalt metal in 1954 totaled 14,227,754 pounds. In addition, the cobalt content of imported white alloy and ores amounted to 2,363,900 pounds. Also, 439,219 pounds of cobalt oxide were imported. Of the imported cobalt metal, Belgian Congo supplied 11,575,782 pounds, plus 5,464,957 pounds of white alloy containing 2,360,551 pounds of cobalt. Imports from Canada consisted of 1,219,628 pounds of metal and 3,349 pounds of cobalt contained in ores. Other major imports of cobalt metal were 918,311 pounds from Germany, 322,145 pounds from Norway, and 36,680 pounds from Northern Rhodesia.

Consumption of cobalt in the United States during 1954 was 7,350,000 pounds, 32 percent below that of 1953. The decrease resulted mostly from a 2,545,000-pound decline in using cobalt in high-temperature alloys. Also, less was used in permanent-magnet alloys, high-speed and low-cobalt alloy steels, alloy hard-facing rods, and cemented carbides. However, these losses were partly offset by gains in its use in ground-coat frit and pigments.

The year saw almost every major foreign producer of cobalt increase production. Several new plants went into operation and work continued on others which are scheduled for completion during the next few years.

In Belgian Congo, Union Minière du Haut Katanga which provides nearly three-fourths of the free world's cobalt has been increasing its output. In Northern Rhodesia the Rhokana Corporation, Ltd. has also increased production. Chibuluma Mines, Ltd. announced that it will build a cobalt treatment plant at Ndola, Northern Rhodesia, to treat concentrate from the new Chibuluma mine near Kitwe which is now being developed. The first stage of the electric smelter is planned for operation in 1956. Kilembe Mines, Ltd. in Uganda is developing a large copper-cobalt ore body. Work is presently continuing on a 1,400-ton plant and full production is expected to be reached in 1956. In French Morocco, the Société Minière de Bou-Azzer et du Graara is modernizing its installations and increasing exploration activities.

The increased output from Canada came largely from the Sudbury and the Cobalt-Gowganda area mines in Ontario, plus byproduct cobalt from the Lynn Lake nickel operation of Sherritt Gordon Mines in Manitoba. Sherritt Gordon's refinery at Fort Saskatchewan, Alberta, began production in the later half of the year. This company plans on producing about 300,000 pounds of cobalt metal annually. The year also saw the first production of electrolytic cobalt at the Port Colborne, Ontario refinery of The International Nickel Company of Canada, Ltd. This is the first commercial production of electrolytic (high purity) cobalt in Canada. Deloro Smelting & Refining Co., Ltd. expanded and modernized its smelter in eastern Ontario, and is presently producing about 130,000 pounds of cobalt metal per month. Cobalt Chemicals, Ltd., which has been rehabilitating its smelter near Cobalt, Ontario during the past two years, began production in early 1954.

In the United States the refinery of the African Metals Corporation at Niagara Falls, New York operated at about six percent less than in 1953, and that of the Pyrites Company at Wilmington, Delaware produced 18 percent less than in the previous year. Work continued at the chemical refineries of the Calera Mining Company and the National Lead Company to solve corrosion and other operating problems. National Lead's plant at Fredericktown, Missouri was constructed to treat an iron concentrate containing cobalt, nickel, and copper. The Garfield, Utah refinery of Calera is treating concentrates from cobalt-copper ores from its mining operation in Idaho.

## CHROME



By FAY I. BRISTOL  
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Chromite, probably more than any other mineral, has proven that it takes time to increase production and rehabilitate old mines and find new ones. The year 1954 shows what long term

contracts, at a good price, will do internationally and domestically.

At the start of the Korean war domestic production, for all practical purposes, was zero. In 1954 we produced domestically 17 percent of the requirements for 1954. Imports, which were in very short supply at the start of the Korean war, exceeded consumption by over 50 percent. Most of this was supplied on long term contracts.

Consumption was off quite considerably, as chromite follows steel production, which was markedly off in 1954. With steel production climbing, 1955 should show a heavy increase in the use of chromite. The Philippine Islands showed a tremendous increase in world shipments in 1954, and shipments to the United States, for the very simple reason that the Philippine ore was offered at substantially lower prices than the other foreign producers. Their mines having been completely rehabilitated since the war, and back in full production, with a large amount of new equipment and ship loading facilities.

American Chrome Company operating the Mout mine at Nye, Montana was in full production working on its contract that expires on December 31, 1961. Northwest Alloy's, Inc., started to up-grade the stockpile of chrome concentrates near Coquille, Coos County, Oregon, and is producing low carbon ferro-chrome in their plant at Meade, Washington, from these concentrates.

Alaska again became a producer when the Kenai Chrome Company of Kenai, Alaska started shipments on its government contract.

The 100 or so domestic producers of high grade chromite in the California-Oregon region have steadily increased production, but as their program runs out in 1957 very little exploration work was and is being done. Although numerous, very substantial, deposits have been uncovered, few people are going ahead with their development due to the shortness of the program.

If domestic production was in the 20 to 25 percent bracket, this country could remain quite independent in time of all-out war. If the domestic program would be extended we could reach the 25 percent and maintain it, making us reasonably safe in time of all-out conflict, as this could be expanded, while drawing on our stockpile.

## COPPER

At the beginning of 1954, the so-called "producers" price of copper in the United States was 30 cents per pound. It remained at that level throughout the year. The uniformity of domestic price throughout 1954 by no means reflects a steadiness of supply and demand relationship during that period. Particularly is this true as to circumstances of the last quarter at which time a general scarcity of copper brought the price on the London Metal Exchange to the equivalent of about 38 cents per pound.

Early in 1954 there appeared to be a world surplus of copper in that Chile had accumulated some 180,000 tons of unused metal which was overhanging the market. Because of this, together with the coming into production of several new and sizeable properties, it was widely felt that a drop in price probably would take place. The atmosphere in this regard was cleared in May, 1954, by the purchase from Chile by the United States Government for stockpile of 100,000 tons of copper at 30 cents per pound—a transaction apparently made to ease the economic plight in Chile. Here, indeed, was a new type of factor to alter the ordinary law of supply and demand and one which could not help but upset previous predictions of most forecasters in copper.

At about the same time, there began a definite increase in demand in Europe. Likewise, previous talk of a "dollar shortage" abroad for purchases of copper seemed largely to disappear. Mines in this country and in Chile which, earlier in the year, had shortened their work week to five days, returned to a six-day basis because of increasing demand. Previous indications of a probable price drop disappeared entirely.

Next, starting about mid-August, came a series of strikes at some of the major copper properties in the United States, and Chile to change the picture further from one of oversupply to one of actual scarcity. By October, even though these strikes had then been settled, the resulting loss of production threatened curtailment of operations and even shutdown in some of the wire and brass mills of this country. At this point, the government, meeting an emergency in copper supply, released to industry some 41,000 tons of copper which, under existing contracts, otherwise were destined for delivery to the Govern-

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ment stockpile. The release of this tonnage helped to compensate a loss of production through strikes of about 60,000 tons. The expeditious action taken by various departments and agencies brought praise from various sectors of the copper industry. During this period of scarcity, only restraint on the part of producers and custom refiners kept the domestic price from skyrocketing above the 30-cent level. In retrospect, opinions seem to differ as to whether such restraint actually was in the best interest of the copper industry.

Meanwhile, in Europe, there developed a scramble for copper which, by year end, brought the price on the London Metal Exchange to about 38 cents per pound. To make matters worse, a strike loomed at the Rhodesian mines involving some 36,000 tons per month. In early January, 1955, that became an actuality. At the end of 1954, then, there existed a world-wide shortage of copper—a reversal of conditions found at the beginning of that year.

Aside from these disturbing incidents, 1954 was a better year for the United States copper industry than had been widely anticipated at the year's start. In the first place, there was no drop in price. Secondly, on the basis of deliveries to fabricators, consumption in 1954 was about 1,207,000 tons compared with 1,444,000 tons in 1953. For a so-called "peacetime" year, it was a good rate of consumption even though representing a decline, from 1953, of about 16.4 percent. Moreover, if the supply during the last four months of the year had not been cut by strikes, deliveries to fabricators undoubtedly would have been considerably higher than they actually were.

At the outset of 1955, copper market conditions may be called chaotic. Late in January, as a result of the disparity which arose between price in the United States and Europe, the domestic price arose from 30 to 33 cents per pound. Shortly thereafter, the price on the London Metal Exchange rose to an equivalent of over 44 cents per pound, thereby increasing the inequality between domestic and London price over that which existed before the United States price rise.

Early in February, the stringency of copper supply again brought emergency action by the Government, this time in the form of placing restrictions on exports of copper scrap and refined copper. This should result in some aid to domestic fabricators but of course does not add to the world supply.

At this writing (February 15, 1955), it is reported that the Rhodesian mines gradually are getting back into production. A resumption of full production in that field—present capacity of which now has outrun that of Chile—certainly should help to restore some order to the copper market. Because of the Formosan situation and the many other imponderables facing the copper industry, it would seem futile to say more about the outlook for copper for 1955.

## FLUORSPAR



By C. O. ANDERSON  
President  
Ozark-Mahoning Company  
Tulsa, Oklahoma

The shipments of fluorspar from United States mines during 1954 continued downward along the trend observed for several years and amounted to about 235,000 tons as compared to 317,930

tons in 1953. A brief filed December 20, 1954 by a committee, representing American Fluorspar Producers, with the Tariff Commission stated that the total United States annual production capacity for acid grade fluorspar is 264,000 tons and for metallurgical grade fluorspar is 298,500 tons. Explanation of declining shipments from domestic mines is continued heavy imports and low prices.

Total consumption of all grades of fluorspar declined from the record figure of 586,798 tons in 1953 to about 475,000 tons. Nearly 95,000 tons of the decline occurred in the use by the steel industry. Some declines occurred in the uses by glass, enamel and "all other" industries, but use of acid grade was substantially the same as the 1953 figure of 223,359 tons which for the first time exceeded the use by steel and the excess was about 30,000 tons. Prospects for increases in consumption of acid spar appear reasonably good, whereas for the other grades the prospects are less promising for some time unless in event of national emergency.

The imports of all grades approximated 305,000 tons, a reduction of about 62,000 from the 1953 figure, but still about

64 percent of the consumption. This is an unhealthy situation for the domestic industry when it possesses productive facilities to take care of the entire consumption. The principal countries sending imports to this country are in decreasing order of tonnage for the first eleven months of 1954: Mexico 125,671, Italy 49,185, West Germany 35,684, Canada 31,835, and Spain 30,559. Imports of acid grade was 70 percent of the total and equal approximately to the 1953 figure of 206,108 which was about 90 percent of the domestic consumption of this grade.

During the past two years metallurgical fluorspar prices per ton have dropped from the \$38.00-to-\$42.00 range to about \$26.00 f.o.b. Rosiclare, Illinois with little or no business done at this figure. The domestic metallurgical fluorspar industry is in a deplorable state with nearly all operations shut down thruout the country. The \$26.00 figure is in so many cases so far below cost of production that indefinitely long shutdowns seem to be the outlook unless governmental action of some kind is taken to revive the industry. In August 1954 a stockpiling program was announced thru ODM but to date (February 1955) no purchasing has been done because governmental agencies have not determined the prices to be paid; the price of \$26.00 being generally below the cost of production cannot accomplish the objective.

Prices of acid grade and of ceramic grade have declined sharply; production has decreased substantially thru shutdowns and thru curtailment. The status of acid-grade and of ceramic-grade producers, taken as a whole, is not as depressed as that of the metallurgical fluorspar producers but is rapidly moving in the same direction.

The President's Cabinet Committee on Minerals Policy reported November 30, 1954: "As an essential concomitant of the long-term stockpile policy, the Committee recommends the preparation of studies on a case-by-case basis to determine the proper levels of domestic mineral production for each mineral commodity on which to base mobilization plans." Fluorspar is considered to be both a strategic and a critical mineral, and hence it will be interesting to anticipate what the government agencies may propose to do to keep this industry in some reasonable state of health.

Consumption of all grades during 1955 will probably be as good or better than in 1954 but the struggle continues whether imports produced in countries where wage standards are far below those obtaining in this country will compel a condition approximating a rather complete shutdown of the domestic industry or whether some reasonable balance will be found between imports and domestic production, so that the domestic industry can retain enough vigor to respond to mobilization plans referred to in the mentioned "Minerals Policy."

## GOLD



By GEORGE O. ARGALL, JR.  
Editor  
Mining World and World Mining

The most important gold developments in 1954 were: marked increase in gold output by principal African mining countries; drop in output in gold producing countries in North and South America, excepting Canada;

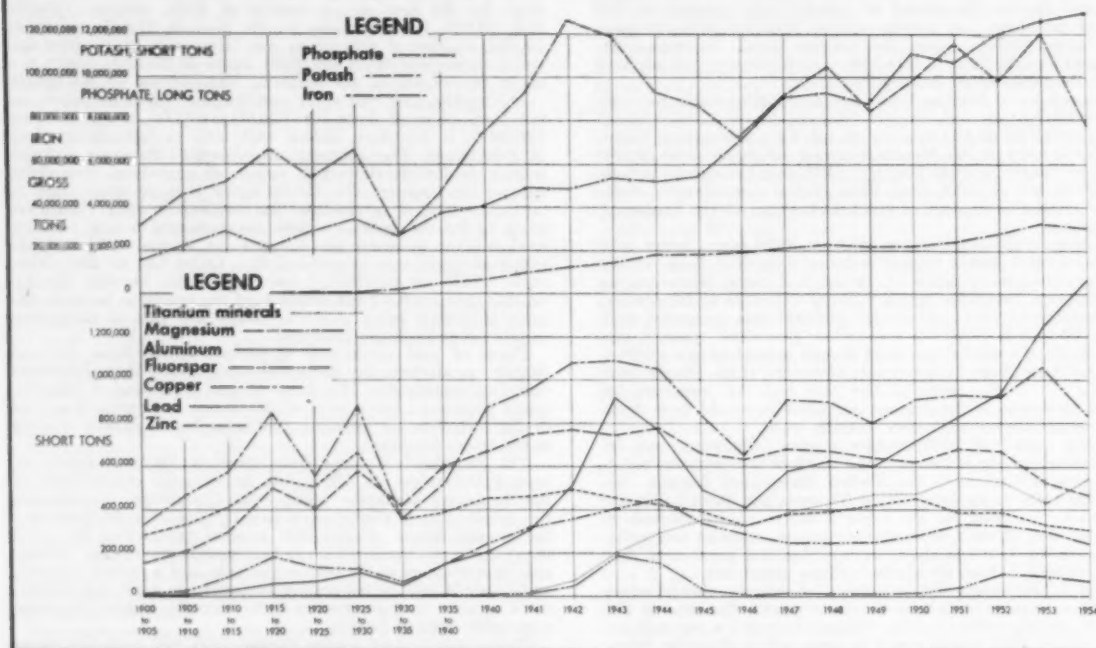
disappearance of gold premium on Free Market sales; reopening of the London gold market; continued recognition of the importance of gold mining by many governments; cessation of sales of Russian gold on the European continent in the last part of the year; and the findings of fact concerning L-208 damage claims by Commissioner Day for the United States Court of Claims. These are more fully described below.

There is no question about the importance of byproduct uranium on the gold mines of the Union of South Africa (Transvaal and Orange Free State). Uranium production has extended the life of many mines, permitted the working of lower grade gold reefs, and perhaps in the near future, will be more important inasmuch as new gold mines will be prospected for and developed in large part because of the associated uranium. An indication of importance of uranium to these mines is the revenue derived for uranium: in 1953 £3,873,029, and in 1954 £14,835,344.

By more than doubling tonnage of ore mined, the Orange Free State mines increased gold output nearly three times—to 1,122,605 fine ounces. This was made possible by two events: first, the start of milling operations by four new gold



## U. S. MINE PRODUCTION OF KEY METALS FROM 1900 TO 1955



mines which raised to eight the number of producers; and, second, the older mines were able to treat more ore from stope faces which had an appreciable higher grade than development ore. Despite treating much development ore, average Free-State grade in 1954 was 4.666 dwt. (0.233 ounce) per ton compared with 4.002 (0.200 ounce) in the Transvaal mines.

Once again as is customary in the Yearbook, gold production from the Transvaal (Union of South Africa) is listed separately from that of the Orange Free State (Also South Africa). By this method the 10 most important world gold producers with Australian production estimated in 1954 in descending order of importance were: Transvaal, Canada, United States (including Alaska), Orange Free State, Australia, Gold Coast, Republic of the Philippines, Mexico, and Columbia. Belgian Congo was in 11th place in both years.

For 1955 the prediction is for the Orange Free State to pass the United States and for total Transvaal and Orange Free State production to approach, and perhaps equal, the all-time annual high output of 14,386,381 ounces in 1941.

1954 was characterized by six of the seven largest gold producers increasing output. Orange Free State output increased the greatest—664,278 ounces to 1,095,540. Transvaal production was up 605,152 ounces to 12,114,505. Other production by countries with comparable 1953 output in parenthesis, was: Canada 4,279,852 (4,055,723); United States including Alaska 1,831,741 (1,970,000); Australia 1,100,000 (1,075,080); Gold Coast 787,075 (730,963); Southern Rhodesia 535,852 (501,057); Republic of the Philippines 416,053 (480,625); Columbia 377,062 (437,200); Mexico 395,700 (483,483); and Belgian Congo 359,200 (371,020).

Once again, as a regular feature of the Yearbook, gold production for a number of years is carried in metal production tables incorporated with each country's report.

In Canada, the high cost gold mines continued to receive cost-aid from the government if they sold directly to the Royal Canadian Mint. Those mines selling on the Free Market were not entitled to this aid. In Australia the Commonwealth government continued to seek a higher world gold price and started an assistance plan based on payment of 75 percent of the excess of the average cost of production per ounce over £A 13 10s (\$30.24). For small mines the assistance is £A 1 10s (\$3.36) per ounce with maximum for any mine at £A 2 (\$4.48) per ounce.

In the United States the most important event for the gold miner in 1954 was the report of Commissioner Day of The United States Court of Claims when he ruled on his findings

of fact on March 30. This ruling concerned the cases brought against the federal government for the infamous War production Board order L-208 which closed the nation's gold mines during World War II. The Commissioner's finding was favorable to the industry in that the full Court should interest itself in cases. Early in 1955 the full five-judge Court of Claims heard arguments by several gold mining companies covering the question of government liability. At the time the Yearbook went to press, the court had not handed down a decision.

For 1955 there is a good chance that Russian gold will again reappear on the European markets to earn foreign exchange to pay for Free World capital goods as delivered, but which were ordered in 1954. Russia, of course, sells gold for required for foreign exchange and this is totally independent of mine production.

## IRON



By MARVIN A. HUSTAD  
Field Editor  
Mining World

year of 1953 when 117,994,769 gross tons were produced.

The Lake Superior states accounted for 78.5 percent of the total production. This was followed by the western states which produced 7.4 percent, the southern states which produced 7.2 percent, and the northeastern states with 6.8 percent. Minnesota continued to lead the states by producing 49,015,000 gross tons. Michigan was next with 10,447,000, and Alabama third with 5,500,000 gross tons.



Estimated iron ore shipments in 1954 amounted to 76,998,000 gross tons representing a value of approximately \$524,968,000. The average price per ton increased only slightly from that of last year of \$6.75 to about \$6.82 per ton in 1954 (this does not include cost of transportation beyond the mine).

Imports of iron ore during the year were estimated at 15,000,000 gross tons as compared to 11,074,035 gross tons in 1953. Canada, Chile, Peru, and Venezuela were the principal sources. Exports in 1954 decreased by approximately 1,000,000 gross tons.

The 1954 drop in domestic production was due to the lower capacity at which the steel mills operated, and to the carry-over from 1953 of accumulated iron ore stockpiles. Mines and mills which lowered their output the most were those having high operating costs or whose product was high in silica. The decrease in consumption of steel did not seem to effect the future plans of the iron and steel companies. New washing, heavy media separation, and cyclone plants went into operation on the Lake Superior iron ranges during 1954 and many others were under construction or being designed.

Interest in 1954 again centered on the new taconite developments in Minnesota and Michigan. The largest venture in taconite to date is the \$300,000,000 project of the Erie Mining Company. Erie began awarding contracts early in the spring for construction of a beneficiation plant near Aurora, Minnesota. The plant is to have a capacity for milling 66,000 gross tons of ore per day producing 7,500,000 tons of taconite pellets a year. This will be the largest single mill ever to be constructed at one time. Pellets will be shipped by rail 72 miles to loading docks now being constructed on the north shore of Lake Superior.

Reserve Mining Company is currently spending \$160,000,000 on Minnesota taconite operations. Development work at its mine near Babbitt and construction of a beneficiation plant at Silver Bay (located on the north shore of Lake Superior) continued during the year. Reserve's mill is being constructed to handle 30,000 gross tons of ore per day with a resultant production of 3,750,000 tons of pellets annually. The plant was so designed that it can later be expanded to produce an ultimate 10,000,000 tons a year. Ore partly crushed at the mine will be transported 55 miles by rail to the plant. First production is planned for late 1955.

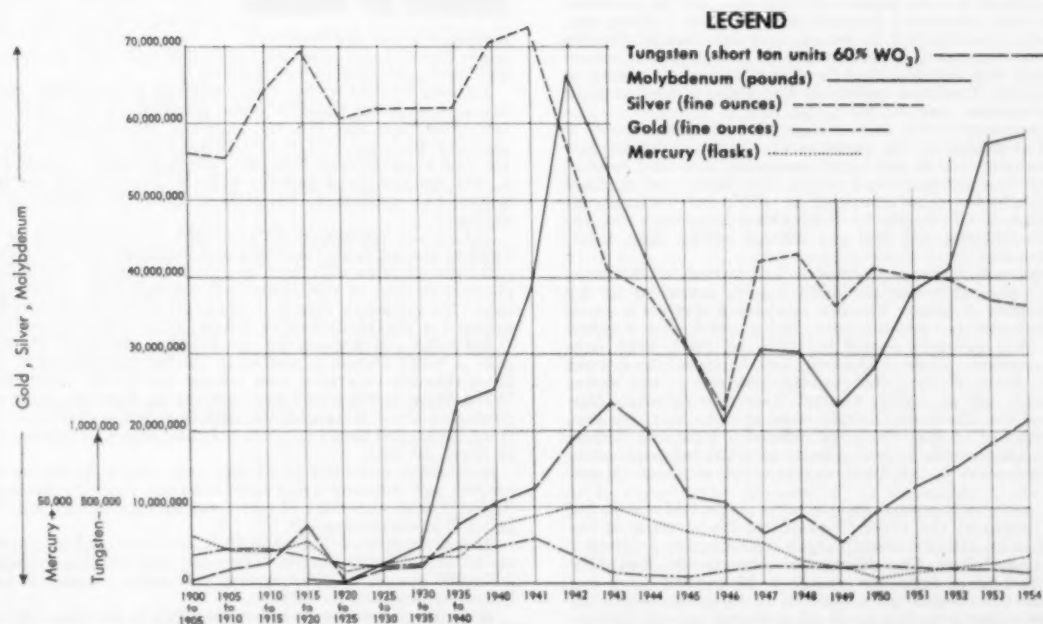
At Mountain Iron and Virginia, Minnesota, the Oliver Iron Mining Division of the United States Steel Corporation continued making changes at its pilot taconite mines, concentrating plant, and agglomerating plant as more operating information was gained. Oliver's pilot taconite operation which has a capacity of 500,000 tons of concentrates a year represents an investment of about \$23,000,000.

At Humboldt, Michigan, the Humboldt Mining Company, jointly owned by The Cleveland-Cliffs Iron Company and the Ford Motor Company, and operated by Cleveland-Cliffs, produced the first concentrate in early 1954 from the non-magnetic jasper ore of the Marquette Range. The Humboldt flotation mill which has a present capacity for producing 250,000 tons of concentrate a year later is to be materially increased by the construction of additional units. Cleveland-Cliffs also has under construction a similar project near Republic, Michigan. This operation will have an initial capacity of 500,000 tons annually and is scheduled to begin production in late 1955. Late in 1954 Cleveland-Cliffs awarded a contract for the construction of a 2,000-ton-per-day agglomerating plant. The plant will be located near the port of Marquette, Michigan and will pelletize concentrates produced at the Humboldt and Republic mills.

In developments outside of the United States, Canada received the most attention with the first shipment of ore in July from the Quebec-Laborador field by the Iron Ore Company of Canada. Early in 1955 the Bethlehem Mines Corporation expects to begin production of magnetic pellets at its new plant at Marmora in southeastern Ontario. Steep Rock Iron Mines Limited in Ontario continued with its expansion program to produce at least 5,500,000 gross tons annually. Also in the Steep Rock area, Inland Steel Company through its Canadian subsidiary, Caland Ore Company, was preparing to begin hydraulic stripping of overburden from its ore body. First production by Caland is planned to be reached by 1960.

Among other important foreign developments was the first shipment of high-grade ore from Cerro Bolivar, Venezuela, by the Orinoco Mining Company. Also, in Chile, Bethlehem Chile Iron Mines Company neared completing development of its Romeral mine and construction of rail and port facilities, while in Peru the Marcona Mining Company increased production so that its total shipments in 1954 amounted to 1,897,501 tons.

## U. S. MINE PRODUCTION OF KEY METALS FROM 1900 TO 1955



## LEAD



By STANLEY DAYTON  
Field Editor  
Mining World

When the final figures for 1954 are tallied, the international outlook for lead should see a continuance of the near record world production levels established in 1953. Balanced against this trend is the domestic

situation here in the United States where the output of newly mined lead fell to the lowest levels since the 1932-34 period.

On the market scene, the year opened with the metal being quoted at 13.50 cents in January 1954, with the price subsequently dropping to 13.00 cents then to 12.50 cents on February 18. From that point on the price advanced in a series of 1/4 cent increments to 15.00 cents on October 5, and the market remained stable for the balance of the year.

Two factors weighed heavily in the price increases which took place. Throughout the year there was an increased demand for lead abroad which tended to ease the imports flooding this country. Imports of lead in ore and matte (which accounts for roughly 30 percent of the total) increased slightly to 161,517 tons during 1954, compared to 160,929 tons in 1953. Imports of refined lead in pigs and bars, however, dropped sharply to 276,282 tons from 385,071 tons in the preceding year, according to the American Bureau of Metal Statistics.

The federal government stepped into the picture to materially strengthen the price structure through the resumption of stockpiling. The United States Tariff Commission conducted hearings late in 1953 on the question of tariff rates for lead and zinc on the recommendations of Congress and as a result of appeals made under the escape clause of the Reciprocal Trade Agreements Act by the industry. The commission recommended to the President on May 21, 1954, that full tariff increases be permitted. The President, largely on the advice of the State Department, turned the request down and stockpiling was substituted as an alternative.

The ultimate objective sought in the stockpiling program is to bolster domestic production, but there is evidence that little success toward this end has been attained. The question uppermost in everyone's mind is what will happen following June 31, 1955, the end of the fiscal year, on government acquisition for the stockpile?

The outlook for the balance of 1955 can only be predicted on the basis of general business activity. New building and construction is expected to be up, and the Federal Reserve Board has forecast a 5 percent rise in industrial production. In general this indicates that there should be some upturn in consumption. The Lead Industries Association is hard at work developing new uses for the metal.

The consumption of lead during 1954 dwindled nearly 9 percent compared to the previous year. Use in storage batteries continued to be the largest consumer, with lead used in tetraethyl occupying second place. The latter use declined only slightly last year compared to 1953, but battery consumption was off sharply in 1954. Other important uses are for cable covering, red lead and litharge, solder, pipe, sheet, and extrusions.

The domestic mine production of lead totaled 317,000 tons, nearly 7 percent below the 1953 output, according to the U. S. Bureau of Mines. The low production was not a result of curtailment in output made during 1954, but resulted largely from cutbacks started in 1952 and 1953. With only three exceptions, Utah, Oklahoma, and Virginia, the pattern was the same all over the country, production was down. Regionally, only the West Central States (Southeastern Missouri and the Tri-State District) were able to hold the line. The states east of the Mississippi suffered a 4 percent decline, but the western area bore the brunt of restricted production. Total production in the West was reported as down 13 percent.

Utah posted a 5 percent gain in mine production due to the greater output at the Chief Consolidated No. 1 mine in the Tintic district, and the resumption of operations in September at the United Park City Mines Co. mine in the Park City region. Oklahoma registered nearly a 40 percent gain due largely to the re-entry of a number of operators when the metal price began to firm up at 15 cents per pound. The increase in Virginia is accounted for by the higher lead content

in the ore mined at the Austinville mine of the New Jersey Zinc Company.

The picture abroad finds mining activity in lead proceeding at an increased rate in Canada. Princo Inc. was up 14 percent from 387,411,000 tons in 1953 to 442,542,820 tons in 1954. The only new producer was Keymet Mines which was officially placed in operation in October. The property is about 15 miles north of Bathurst, New Brunswick.

Major activity in exploration and development continue in New Brunswick and at Pine Point, Great Slave Lake, Northwest Territories. Brunswick Mining & Smelting has indicated reserves in excess of 60,000,000 tons of lead-zinc ore in two deposits with an average grade of 5.3 percent zinc and 1.7 percent lead. American Metal Company is exploring another promising deposit, about 12 miles southwest of the Brunswick Mining & Smelting holdings, in which combined lead-zinc values have been reported at 15 percent. At Pine Point Mines, indicated ore reserves for open pit mining are estimated at 5,000,000 tons of 4.0 percent lead and 7.4 percent zinc.

Mine production and output of lead continues to mount in Australia, with an estimated 1954 total of 280,000 long tons. Activities center at Mount Isa Mines Ltd. in Queensland and at Broken Hill in New South Wales.

In Mexico preliminary reports indicate a decline in production from 221,548 metric tons in 1953 to 211,681 metric tons in 1954.

Important progress has been reported in lead metallurgy (see MINING WORLD February 1955) as the Bunker Hill Mining & Concentrating Company completed its first full year of smelter operation utilizing its new charge preparation system. Smeltersmen have been watching this installation with a great deal of interest, since the blended and pelletized roaster feed has established much more efficient physical and chemical control of smelting conditions.

## LITHIUM



By WALTER M. FENTON  
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Lithium Corporation of  
America, Inc.  
Minneapolis, Minnesota

Although lithium is more abundant in the earth's crust than tin, lead, or zinc, averaging about 0.007 percent, it is present in extremely small deposits. Lithium-bearing ores, called pegmatites, contain approximately 1.0 to 1.5 percent  $\text{Li}_2\text{O}$ . The most important of the pegmatite minerals are spodumene, lepidolite, amblygonite, and petalite.

Lithium production has been increased in the Kings Mountain area of North Carolina where extensive deposits of spodumene, the most plentiful and economic lithium raw material, are currently being worked by Lithium Corporation of America, Inc. and Foote Mineral Company. The spodumene content here is very uniform and invariably exceeds 20 percent of the pegmatite. Pure spodumene has a theoretical  $\text{Li}_2\text{O}$  content of 8.0 percent.

Substantial amounts of lithium salts are also found in the brine of Searles Lake, California and recovered with large scale extraction of other salts, such as potash and borax. The lithium chloride content of this source will average 0.02 to 0.03 percent. The American Potash & Chemical Company is currently engaged in the production of lithium salts from this source.

Extensive ore deposits are also found in the Black Hills region of South Dakota as well as in Quebec and Manitoba. The latter deposits may soon rank among the first in importance. When these newly developed deposits in Canada commence producing about the middle of 1955 they will undoubtedly become the second most important potential source of lithium ores in North America.

Substantial quantities of lithium ores, mostly lepidolite and petalite, are currently being imported from Southern Rhodesia, Africa. Large quantities of ore from Belgian Congo are also going to European markets.

The production of lithium in 1954, expressed as  $\text{Li}_2\text{O}$ , is estimated at 3,000,000 pounds. This compares with an estimated 2,700,000 pounds in 1953. A very substantial increase in production is promised for 1955.

With the completion of its new facilities in the Kings Mountain area, Lithium Corporation of America, Inc. will greatly in-

crease last year's output and within two years expect to still further increase output. Lithium Corporation of America's new Canadian sources will eventually be capable of processing 1,000 tons of ore daily.

During the past three years the military and civilian demand for lithium products has far exceeded existing productive capacity. The year 1955, however, will see the end of shortages. The new facilities of Lithium Corporation of America, Inc. will very materially increase the total productive capacity of lithium in the United States.

It has been predicted that the ceramic industry may soon require much greater quantities than has been consumed in the past. Also, the demands for lithium hydroxide in the manufacture of lubricating greases may eventually exceed 5,000,000 pounds per year. The lithium industry is taking steps to increase production capacity to meet these demands. It should be mentioned, also, that new uses of lithium compounds are continually being developed, creating still further requirements for lithium.

## MANGANESE



By F. A. McGONIGLE  
Vice President and  
General Manager  
Manganese, Inc.  
Henderson, Nevada

Imports of foreign manganese ore followed the decline in steel production during 1954. As a result, imports of plus-35-percent ore were estimated to be

2,400,000 short tons compared to 3,514,353 short tons imported in 1953. Imported ferromanganese likewise dropped to 110,000 short tons versus 125,000 short tons in 1953.

The industrial consumption of ore, including ferromanganese, last year was 1,690,000 short tons compared to 2,254,000 short tons in 1953. Domestic mines produced approximately 194,500 short tons of ore, whereas in 1953 the total was some 33,000 short tons less. Domestic production consequently accounted for only 11 percent of the nation's requirements, although this was up four percent over 1953.

India again was the largest source of foreign ore, supplying about 36 percent; Cuba was next at 15 followed by Union of South Africa with 13; the Gold Coast at 11 and the Belgian Congo with nine. The remaining 16 percent in decreasing order came from Mexico, Brazil, French Morocco, Chile, Greece, and Angola.

Imported ore at the first of the year could be purchased at \$1.08 to \$1.10 per long ton unit, with long term contracts available at \$0.90 per long ton unit, customary terms. These quotes dropped to a low of \$0.70 to \$0.75 in October, but climbed 5¢ a unit by the end of the year.

Purchases of domestic ore at the government stockpiling depots at Wenden, Arizona; Deming, New Mexico; and Butte-Phillipsburg, Montana and under the Nationwide program showed appreciable gains. In December 1954 the Office of Defense Mobilization revised its purchase policy, declaring that manganese ore would be purchased on the basis of recoverable units; consequently the Wenden depot was given an additional life of some five to six months. Each of the depots mentioned has an allotment of 6,000,000 contained long ton units, and the allotment under the Nationwide program is 19,000,000 contained long ton units.

Bills have been submitted to Congress to increase the allotments under these programs, and also to establish depots in Arkansas, and the Appalachian region. Favorable action is essential on this legislation.

### Domestic Manganese Purchases in 1953 and 1954 at Government Depots

Place	Estimated Purchases Thru 1953 Contained Long Ton Units	Estimated Amount Purchased Thru 1954 Contained Long Ton Units
Wenden, Arizona	2,089,283	5,820,542
Deming, New Mexico	789,618	2,213,221
Butte-Phillipsburg, Montana	428,809	1,418,058
Nationwide	557,252	1,800,000

One disturbing factor in the world manganese picture was the re-entrance of Russia, who through May 1954 sold 93,000 tons of ore to the United Kingdom. Market price was not affected, but the danger is what the Russians propose to do in the future. In December 1954 the Amtorg Trading Corporation offered to trade the United States manganese for butter and edible oils. This idea was tossed around in Washington to some extent. No definite action either for or against the proposal was taken.

The U. S. Bureau of Mines did valuable research work in the various types of domestic ores, including those from the Cuyuna Range in Minnesota, Aroostook County, Maine, Artillery Peak in Arizona, as well as analyzing ores submitted to the purchase depots at Wenden and Deming.

General Services Administration undertook an extensive research program on domestic ores, but advised that another 18 months will be necessary to complete its projects. Some 20 new or unproven processes were under study.

The U. S. Bureau of Mines' and General Services Administration's programs are rendering a real service to this country. Their efforts should be continued in order to further the self-sufficiency of the United States in manganese ore. This may be accomplished, as is exemplified to date by the report of the Cabinet Committee on Mineral Policy and in the President's budget message of January 17, 1955. Encouragement to find and develop new ore deposits is paramount. To rely on Russia for imported ore is folly.

## MERCURY



By J. ELTON GILBERT  
Manager  
Cordero Mining Company  
Palo Alto, California

The quicksilver industry, which for years has felt like the forgotten stepchild, was touched by the magic wand of a fairy prince, in the form of a fair price, in 1954 and suddenly felt like Cinderella.

The price per flask at the beginning of the year was about \$190.00. The future price and markets were uncertain, but by the middle of the year the material was selling for above \$250.00 and General Services Administration suddenly announced a 3% year purchase program, with a floor of \$225.00, to purchase 125,000 flasks from domestic producers.

As the price continued to advance, the "mercury mystery," as it was labeled, took on all the aspects of a cloak-and-dagger melodrama. Local and national news magazines headlined the mystery. Congressmen, pressured by consumers, met with bureaucrats and threatened investigations. Rumors of new uses were numerous and wild. The U. S. Bureau of Mines demanded reports monthly instead of quarterly (anticipating a phenomenal increase in production). Sharpshooting promoters were quick to tie onto the publicity for a free ride. The only ones not unduly perturbed by the price, which was up as high as \$330.00 per flask, were the producers. Naturally, it was welcomed, but with all the increase in labor and material costs since World War II, \$330.00 was not as good a price in terms of what it could buy as the \$193.00 price received during World War II.

Just what started the furor is still unknown by producers. They were not told that a mercury shortage existed or was expected. They were not asked to supply metal to any agency of the government. When General Services Administration announced a purchase program domestic producers were not consulted. Just how General Services arrived at a price of \$225.00 is not known. It is believed that foreign producers have a much better knowledge of some of the United States Government's activities than any domestic quicksilver producer. Whether it was a new use that will continue to demand mercury, or just a unique condition that brought a high demand for a short period of time on domestic stocks, the mercury miners do not know. In spite of all the denials and double-talk from Washington, there is still a very good possibility that some branch of the United States government was responsible for the anomalous condition. As usual, our government counted on imports to fill up the "pipeline."

By the year's end the price had leveled off at around \$325.00. Some of the domestic mines had increased production somewhat and the Bonanza mine in Oregon was back in the market with its production of about 100 flasks a month. Practically all the production was coming from the same mines which were pro-



ducing in 1953. The total production for 1954 was up 4,000 flasks to about 18,500, with over 75 percent of it coming from four mines:

New Idria  
Cordero  
Sonoma (Mt. Jackson)  
Abbott

San Benito County, California  
Humboldt County, Nevada  
Sonoma County, California  
Lake County, California  
Douglas County, Oregon  
Valley County, Idaho  
Sonoma County, California

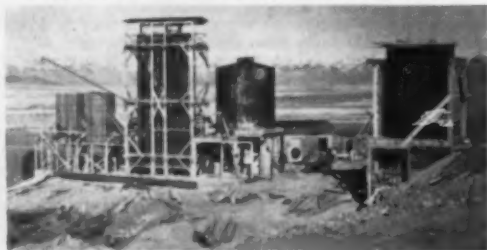
Nearly all the rest came from three other properties:  
Bonanza  
Hermes  
Buckman

Published figures indicate about 80,000 flasks imported during the year, but there has been so much sleight-of-hand work done to conceal the true import figure, these figures are unreliable. Imports were received principally from Spain, with Italy, Mexico, and Yugoslavia following; probably in that order. Spain has recently installed two 100 metric ton Herreschoff furnaces at Almaden, and there are rumors of a third one going in later.

It does seem that the foreign importers now realize that they can control the price and they would be foolish to let it sink much below its present level. The present price has not created a good flood of mercury as some expected. During 1954 there were no new mines brought into production; Bonanza was reopened. Possibly there will only be two new domestic producers in 1955, Sonoma Quicksilver Mines, which is opening an open pit property near Paradise Valley, Nevada and equipping it with a 100 ton rotary furnace, and Cordero Mining Company which is putting a small furnace on the old Horse Heaven mine in Oregon which has been inactive since the plant burned down some 10 years ago.

The domestic production during 1955 will probably increase slightly and may even reach 20,000 flasks. Domestic consumption by industry should be in the neighborhood of 50,000 flasks. Just how much will be consumed directly or indirectly by the government is impossible to anticipate. It now seems probable that some new use has been developed, probably in the atomic energy field. To insure metal for this use it seems some agency is creating or has created a special reserve of metal, in addition to the Munitions Board stockpile and the General Services Administration stockpile. Neither the use, the size of the reserve, nor the manner in which it is held, is known by the domestic mining people.

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## MOLYBDENUM

Molybdenum production in the United States in 1954 was 1,184,000 pounds greater than for 1953 despite a report to the contrary in a New York mining journal's annual review. Also the production in 1954 was not a record due to increased tonnage milled at Climax Molybdenum Company as reported in the same journal. Actually the output of 58,427,000 pounds in the United States was the second largest in history, being exceeded only by 66,437,000 pounds in 1942 when Climax went all-out for production under World War II emergency conditions. Also at Climax, in 1954, production of molybdenite was substantially under peak World War II output.

Chile maintained its position as the world's second largest producer, and Canada remained third. The greatest production increase percentage was in Canada where output was up to 875,000 pounds in 1954 from 323,907 in 1953. All production came from Canada's only producer, Molybdenite Corporation of Canada, which operates a 400-ton-per-day mine and mill at Val d'or, Quebec. This company is shipping to the United States government under a five-year, 6,000,000-pound contract at a base price of \$0.63 per pound.

At Climax, Colorado the Climax Molybdenum Company substantially completed its \$35,000,000 expansion program and by so doing was able to start its footwall mining program above the Phillipson Level. This program was largely the result of a contract with the United States government which made possible the production of low-grade ore which had previously been economically impossible.

With completion of mine and mill expansion, Climax was able to further stretch its lead as the largest underground mining operation tonnage-wise in the United States. In 1954 8,709,900 tons of ore were mined; up from 6,604,857 tons in 1953. Records were set in ore development, production, haulage, crushing, and milling. Records set included: crushing of 14,105 tons of ore in one eight-hour shift; loading and tramping of 1,070 cars of ore on the Storke level containing 9,616 tons with a crew of 20 men for an average of 481 tons per man shift; and the mining and milling of 32,565 tons of ore in one day in September with Phillipson output being 20,890, and Storke 11,675.

Kennecott Copper Corporation continued as the world's second largest molybdenum producer, all as byproduct of its porphyry copper mining operations at Bingham Canyon, Utah; Braden, Chile; Chino, New Mexico; and Ruth, Nevada.

Other United States producers were Molybdenum Corporation of America, Questa, New Mexico; Phelps Dodge Corporation, Morenci, Arizona; United States Vanadium Company, Bishop, California; Miami Copper Company, Miami, Arizona; and the Bagdad Copper Company, Bagdad, Arizona.

Byproduct molybdenum recovered from copper milling in the United States was lower in 1954 than in 1955 because of curtailments in copper production during the first half of the year.

United States producers continued to find import markets for molybdenum products outside the United States with major shipments going to European steel plants.

In 1955 there is a chance for an all-time high United States output. Porphyry coppers are starting the year at a high rate, more molybdenum is being recovered per ton of ore mined at Bingham Canyon, and if Climax could only recover one-half pound more per ton of ore mined than it did in 1954 the record could be broken.

## NICKEL



By A. E. ROBERTS  
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The free-world increased its nickel production by about 50,000,000 pounds during 1954 to an all-time high record estimated at 390,000,000 pounds. This is a 13 percent increase over the 1953 production, which

also had set a record high.



Canadian producers, aided by several new mines, as well as expansion projects at existing operations, upped total nickel output by 34,000,000 pounds. Canada supplies over 80 percent of the free-world's nickel.

Sherritt Gordon Mines Ltd. started operations during the year. The mine and concentrator are located at Lynn Lake, Manitoba and the refinery is at Fort Saskatchewan, Alberta. Production is planned at an annual rate of 17,000,000 pounds of nickel.

International Nickel Company of Canada Ltd., with its five major mines in the Sudbury area of Northern Ontario, reached a new production peak at 275,000,000 pounds. These mines include the Frood-Stobie, the Creighton, the Levack, the Murray, and the Garson. The five have a combined production of about 58,000 tons of ore daily.

INCO started delivery of metallic nickel to United States Government stockpile at the rate of 2,000,000 pounds monthly during January 1954. This is part of INCO's contract with the DMPA to deliver 120,000,000 pounds of nickel in a five-year period ending in 1958.

Canada's second largest nickel producer, Falconbridge Nickel Mines, Ltd., continued working on its \$42,000,000 expansion program pointed at the contract with the DMPA to deliver between 100,000,000 and 200,000,000 pounds of nickel by June 1962. Falconbridge's output was increased by the additional production of the Hardy, East, and Mount Nickel mines which started operations during 1954.

Cuban nickel production will be sharply increased in future years by the expansion project of the United States Government owned Nicaro Plant. This project, designed to increase existing facilities by 75 percent, began late in 1954.

In the Levisa Bay district of Cuba an exploratory drilling program by the Bureau of Mines disclosed an ore body estimated to contain about 35,000,000 tons of nickel ore.

International Nickel increased the price of its nickel 4% cents per pound last November. This brought the price of refined nickel to 64% cents per pound.

The United States Government continued to be the world's largest buyer of nickel through its stockpiling program. The steel industries of the free-world are the largest users of the nickel allocated to consumer consumption for the production of stainless steel and alloy steels. Total nickel consumption within the stainless steel industry fell below the record high in 1953.

The nickel-plating industry received some relief by the increased nickel production during 1954. The demand within the industry is still larger than the available supply, however.

1955 should be, from all available estimations, another record year with production increasing about 25,000,000 pounds. The outlook for civilian consumers is brighter as more nickel will be available than in 1954.

## PERLITE



By E. P. CHAPMAN, JR., and JOHN A. WOOD  
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For the sixth straight year the perlite industry recorded important increases in production and sales of ore and expanded products.

Preliminary year-end estimates released by the Perlite Institute, Inc. indicate a 15 percent increase in crude ore sales with a total value exceeding \$1,700,000; and a 19 percent increase in expanded product sales with a total value approaching \$10,000,000.

The major market outlet continued to be in the building industry where expanded perlite is used as a lightweight aggregate in plaster and insulating concrete. Some 75 to 80 percent of total production is consumed in base-coat and acoustical plasters; and in 1954 perlite aggregate was used in approximately 40 percent of all base-coat plaster applied in the

## Growth Of Perlite Industry 1947 Through 1954

Year	Crude Perlite Sold and Used by Crude Producers		Expanded Perlite Sold	
	Short Tons	Value	Short Tons	Value
1947 <sup>1</sup>	10,450	\$ 58,000	7,700	\$ 271,000
1948 <sup>1</sup>	22,100	134,000	18,600	742,000
1949 <sup>1</sup>	71,100	510,000	52,200	2,385,000
1950 <sup>1</sup>	101,536	649,162	86,962	4,741,383
1951 <sup>1</sup>	153,502	858,099	133,175	7,243,298
1952 <sup>1</sup>	164,845	873,054	154,563	7,997,731
1953 <sup>1</sup>	198,751	1,439,658	174,461	8,894,735
1954 <sup>2</sup>	230,000	1,700,000	208,000	10,000,000

<sup>1</sup> Figures for 1947-53 from U.S. Bureau of Mines, Mineral Industry Surveys.

<sup>2</sup> Estimate of The Perlite Institute.

United States. About 10 percent of production goes into insulating concrete, which is a field in which the independent perlite processors place much reliance for their future growth.

Some increase has been noted in the minor uses such as filter-aid, loose fill insulation, oil well cementing, foundry sands, and soil conditioning.

There are now about 20 firms engaged in mining ore from deposits in seven western states; and the number of expanding plants has increased to more than 75 in 31 states.

Prices within the industry were relatively stable in 1954 although there was some continuation of the trend toward higher prices for ore and lower prices for the expanded product.

The Perlite Institute, Inc., trade association for the industry, has become international in aspect with the joining of producers from England and Australia as active members. The Institute continued to serve as a certification agency for maintenance of product quality by member companies. Investigations sponsored by the Institute have proved the superior fire safety of perlite insulated roofs over many others commonly in use; also during 1954 Institute research showed that the permeability and moisture transmission characteristics of perlite concrete make it highly suitable for use as an insulating fill over metal roof decks. As a result, perlite concrete insulated metal decks have been approved for the application of bonded roofing by the major roofing manufacturers.

Officers of the Perlite Institute are: President, Lewis Lloyd, Alatex Construction Service, Inc., New Orleans, Louisiana; vice-president, J. C. Kingsbury, F. E. Schundler and Co., Inc., Joliet, Illinois; administrative secretary, Richard S. Funk; and technical secretary, Richard J. O'Heir. Institute offices continue to be located at 10 East 40th Street, New York City.

## PHOSPHATE



By G. DONALD EMIGH  
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Total production of phosphate rock in the United States in 1954 was about 14,650,000 short tons—a five percent increase over 1953. Each of the two chief prod-

ucts, fertilizer and phosphorus, showed about a five percent increase.

Florida production was about 10,650,000 short tons. Over 99 percent was from the pebble field around Bartow, remainder from the hard rock area around Dunnellon.

A notable development was the generally stepped-up program of ore reserve acquisition by nearly all the operating companies.

Large-capacity draglines were put into operation by American Agricultural Chemical Company, Smith-Douglass Company, Davidson Chemical Corporation and International Minerals & Chemical Corporation. Armour Fertilizer Works is readying its new mining operation for production in 1955. Davidson is installing belts to remove overburden.

Improved techniques in pumping rock longer distances is furthering the idea that the future will see pumping reaching out as far as five miles, thereby increasing reserves available to washing plants.

1954 was characterized by a large shift of nearly all companies to triple superphosphate production in new plants in the pebble field.

A. A. C. made preparations for installing a second electric furnace to make phosphorus.

The phosphate industry in Tennessee remained about the same in 1954. Production was about 1,750,000 short tons. Most of the production was utilized in electric furnace plants. Smaller quantities were used in the production of fertilizers, both as chemicals and ground rock.

Production of brown rock was chiefly in Maury, Giles, and Williamson counties. Blue rock production came chiefly from Hickman County, and there was some white rock production in Perry County. All production was from surface mining.

In the West 1954 saw a continued increase in the consumption of phosphate rock. Production was about 2,250,000 short tons.

Montana Phosphate Products Company continued underground mining in the Garrison district, working Luke, Anderson, and Gravelly mines. Ore was shipped to the parent company, Consolidated Mining and Smelting Company at Trail, British Columbia, for fertilizer production.

Relyea mine continued underground operations in the Garrison district.

Victor Chemical Works operated Maidenrock and Canyon Creek underground mines in the Silver Bow-Beaverhead County area. Ore is converted to elemental phosphorus in Victor's plant at Silver Bow, Montana.

In Idaho the J. R. Simplot Company operated Gay mine, Bingham County, producing for Westvaco's phosphorus plant and Simplot's fertilizer plant—both at Pocatello. Mining is open pit. Westvaco Chemical Division of Food Machinery & Chemical Corporation operated its Pocatello phosphorus plant. Plant productive capacity was increased. J. R. Simplot Company explored its Centennial Mountain property on the Idaho-Montana border preparatory to mining in 1955.

Monsanto Chemical Company, with a phosphorus plant at Soda Springs, mined ore from Ballard property by open pit. A second electric furnace was placed in production.

San Francisco Chemical Company, Montpelier, conducted open pit operations at nearby Waterloo mine, grinding the ore in Montpelier. The company also did underground development at the adjacent Cumberland mine but suspended operations about mid-year. The company started driving a 1500-foot crosscut in the Dingle-Hot Springs area, located 12 miles south of Montpelier. Underground mining is planned.

Anaconda Copper Mining Company continued underground and surface operations at Conda mine, Caribou County. Rock is shipped to fertilizer producing facilities, Anaconda, Montana.

Jefferson Lake Sulphur Company announced plans to build a triple-super fertilizer plant in the Montpelier area.

During 1954 other companies looked over deposits in Idaho. Wyoming activity was as follows: San Francisco Chemical Company continued open pit mining at Leefe mine, Lincoln County. Lower grade ores were beneficiated by dry milling.

Some exploration work was carried on by other parties in Lincoln County.

In Utah the J. R. Simplot Company mined ore by open pit from Bradley property in the Crawford Mountains. In the same area San Francisco Chemical Company operated the underground Arikaree mine and sunk a 400-foot winze. Development and mining was carried on by the same company at the Emma Tunnel, three miles south of Arikaree Mine.

Western Phosphates, Inc. placed in operation its triple-super fertilizer plant at Garfield. Later in the year plant expansion plans were announced.

Westvaco acquired the Jeff phosphate property in the Crawford Mountains.

it is estimated that production will approximate very close to 2,000,000 tons of K<sub>2</sub>O, of which something over 90 percent comes from the potash district in Carlsbad, New Mexico.

Actual deliveries of potash salts in the United States and territorial possessions by domestic producers for the calendar year 1954 are listed at 1,817,446 tons of K<sub>2</sub>O by the American Potash Institute. This is for agricultural use. In addition, there were delivered potash salts in the amount of 91,809 tons of K<sub>2</sub>O equivalent for the chemical industry, making a total of deliveries for all uses of over 1,900,000 tons. These figures include exports in the amount of approximately 12,000 tons of K<sub>2</sub>O, or less than 1.0 percent of the total production in the country. It should be noted that these figures are for deliveries only. Production has been in excess of this, resulting in a heavy year-end inventory, compared with a year earlier.

Figures on imports are not yet available, but it is estimated that a total of approximately 70,000 tons will have entered this country, mostly from European sources during 1954. There has been a decline of imports since the calendar year 1951. The imports in that year were 554,000 tons of salts. In the calendar year 1952, 356,000 tons were brought in and 157,000 tons in the calendar year 1953. It is the general opinion that the reduction in imports which is noted, and which originated solely in France, Spain, West Germany, and the Soviet-controlled East German area, has been due to certain actions that have been going on in relation to the investigation of "dumping" of potash by these foreign countries. It may be recalled that in April, 1953, there were Congressional hearings on the matter of importation of large quantities of Russian-controlled potash at extremely low prices; such potash being delivered along the East Coast. Early in 1954, an investigation was started by the Treasury Department on the matter of low pricing by East German potash interests. Toward the year's end, the Treasury Department found that dumping had occurred, as defined under the Anti-Dumping Law of 1921, and turned the case over to the United States Tariff Commission to determine the injury or possible injury that could occur to the American producers. This case has been under study with hearings progressing in Washington and a decision is due as to this rather important action insofar as the potash industry is concerned.

It was clearly demonstrated during the 1954 year that the available capacity of production is well in excess of the demand, even though the demand has increased each year and is still increasing. Deliveries of potash salts to agriculture, which comprise over 90 percent of all deliveries, may be recorded as follows: 1952, 1,796,258 tons; 1953, 1,879,626 tons; 1954, 1,887,968 tons.

It is evident that in spite of the fact that farmers' income has declined over the past several years and would normally be reflected in declining purchases of fertilizers in which potash is a major component, the trend to increased usage is contrary to historic formula. It, therefore, seems apparent that in looking ahead two factors are involved in considering the further increased production of potash: (1) the likely increase in the normal consumption of fertilizers by the domestic farmer; (2) the higher percentage of potash contained in the fertilizers themselves. During the war years the potash content of fertilizer averaged something less than 7.0 percent K<sub>2</sub>O. During 1954 the average content of K<sub>2</sub>O in fertilizer was estimated at over 10 percent, so that it can readily be seen that even if there were no increase in the total tonnage of fertilizer consumed, there would be a substantial increase in potash consumption merely because of the higher percentage of potash incorporated in the fertilizers themselves. The combination of these two forces; that is, increased fertilizer consumption and higher potassium content, augurs well for the industry's future.

If one were to make an estimate for the calendar year 1955, it would appear that the demand for potash might well approach the estimates made several years ago by the Department of Agriculture and the Department of Interior, when a goal of 2,185,000 tons of K<sub>2</sub>O was set for 1955, including that required by the chemical industry.

At Carlsbad, New Mexico it now appears that another operation will be started; there having been announced the formation of a new corporation called the National Potash Company, a subsidiary of the Freeport Sulphur Company and Consolidation Coal Company. This new corporation has announced that it will sink a shaft on a large ore body which was discovered several years previously by the Freeport Sulphur Company on federal lands and which has been leased from the government.

There have been reports that the National Farmers Union, which also has a lease on a large acreage of federal-controlled land containing a good-sized ore body, has combined with another corporation with the intention of sinking a shaft and opening a mine on their property. Just when this will occur, has not as yet been publicly announced. It is evident, however, that the addition of one new producer with an estimated capacity of approximately 200,000 tons of K<sub>2</sub>O per year will add substantially to the domestic capacity. If the National Farmers

## POTASH



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There have been a number of interesting developments during the 1954 year. Important among these is the continued increase in both production and consumption of potash salts which has kept the industry moving at an extremely high rate of capacity, this in spite of a reverse trend in farm income. While the actual production figures are not yet available from government sources which compile them,

sumption of potash salts which has kept the industry moving at an extremely high rate of capacity, this in spite of a reverse trend in farm income. While the actual production figures are not yet available from government sources which compile them,

Union sink a shaft and go into production, another 10 percent will be added to the domestic capacity.

As is generally known, perhaps the largest general area of bedded deposits of potash occur in the southern half of the Province of Saskatchewan. Several years ago, the Western Potash Corporation commenced the sinking of a shaft which has now reached a depth of something over 1,500 feet, with approximately another 2,000 feet to go. More recently, the Potash Company of America, the largest single producer of K<sub>2</sub>O in the United States, acquired a lease on an extensive area near Saskatoon in Saskatchewan and has also commenced shaft-sinking operations.

Obviously, the agricultural community need not fear a shortage of potash in this country for a number of years to come. The existing producers have not only increased their production in 1955 over 1954, but several new mines should be in production within two to three years. At least one, and possibly two, of the present operators could double their capacity without difficulty on very short notice if the demand were such as to make it desirable. There is no likelihood of a potash shortage in the foreseeable future.

## SILVER

World consumption of silver was again in excess of world production in 1954, as it has been for several years past, and there is good reason to believe that, if general business activity maintains the upward trend that is widely anticipated, there will be a serious shortage of the white metal for coinage and industrial uses within the next few years, unless the world price is moved up sufficiently to stimulate the necessary additional production.

This, of course, assumes that there will be no change in the United States Treasury policy of buying all newly mined domestic production, as required under the Silver Purchase Act of 1934, or in the policy of the Bank of Mexico of buying all Mexican output offered and disposing of it in world markets as demand requires.

These long-established policies of the world's leading silver-producing countries were largely responsible for the remarkable price stability which characterized the silver market during 1954.

The New York price held steady throughout the year at 85½ cents an ounce, a price originally set on January 16, 1953. The London market, more responsive to supply and demand factors, since the Bank of England in December, 1953 terminated its practice of making silver available to consumers, showed some variations during the year, but within a very narrow range.

World silver consumption in 1954 exceeded world production by approximately 6,000,000 ounces, according to best available estimates. This increases the excess of consumption over production during the past five years to more than 126,000,000 ounces. Production in 1954 is estimated at 213,500,000 ounces, about 3,000,000 ounces less than in 1953. At the same time, consumption was declining almost 20,000,000 ounces, to 219,400,000 in 1954.

Mexico and the United States continued their positions as the two leading silver-producing nations in 1954 with production of approximately 47,000,000 and 36,600,000 ounces, respectively. In both countries output was about 1,000,000 ounces below the 1953 level, but this was more than made up by third-ranking Canada which hit a new record high of 31,000,000 ounces.

Largely responsible for the sharp decline in world consumption was the 20,000,000-ounce drop in industrial usage in the United States, to 85,000,000 ounces. Many countries, particularly West Germany and Great Britain, used more silver in arts and industries in 1954 than in 1953, but the increases were not great enough to offset the decline in the United States.

Domestic mines last year produced approximately 36,600,000 ounces of silver, mostly as a byproduct from copper, lead, and zinc mines. Of this total, the United States Treasury bought 33,800,000 ounces at 90.5 cents an ounce, as required under the 1946 amendment of the silver purchase act. Seventy percent of this amount, or some 23,700,000 ounces, was added to silver bullion stocks as backing for the issuance of \$30,627,173 in silver certificates, and the remaining 10,100,000 ounces went to the seigniorage fund.

Domestic consumption of silver in the arts and industries, as mentioned above, was down sharply, but the amount con-

sumed for subsidiary coinage was up nearly 19 percent to 50,800,000 ounces. Treasury stocks at the year-end were slightly over 3,000,000,000 ounces, about 2/3ds of which was held in the Treasury, mostly in the form of bullion as backing for silver certificates. A little over 1,000,000,000 ounces was in circulation as silver dollars and minor coins.

All indications point to continued stability in the silver markets of the world during 1955. The pressure for higher world prices can be expected to mount as the need for new sources of supply to meet expanding industrial demand and increased coinage requirements grows more intense.

The cause of silver lost one of its strongest advocates and most effective spokesmen during 1954 in the unexpected death of Senator Pat McCarran of Nevada last September. His efforts to protect and improve the monetary position of silver and maintain constitutional monetary controls were ceaseless and untiring and he knew how to get results. His position in the silver picture will be difficult to fill.

## SULPHUR



By JOHN C. CARRINGTON  
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The United States sulphur industry established a new all-time production record in 1954, and the new year begins with productive capacity ample to meet all demands.

Estimated output of sulphur from all sources was 6,650,000 long tons, about 400,000 tons more than in 1953. Of this total about 5,500,000 tons represented sulphur mined by the Frasch hot-water process from salt dome deposits in Louisiana and Texas—an increase over 1953 of about 350,000 tons.

In all, 13 Frasch process mines were in operation. Texas Gulf Sulphur Company, the largest producer, operated three of these, Freeport Sulphur Company five, Jefferson Lake Sulphur Company three, and Duval Sulphur and Potash Company, and Standard Sulphur Company one each.

The gain in production was made possible by the successful operation of Garden Island Bay, Freeport's newly opened mine, at the mouth of the Mississippi River. Completed late in 1953, Garden Island Bay produced in excess of 500,000 tons in 1954.

Sulphur from a variety of other sources accounted for the remaining 1,150,000 tons of 1954 production. About 350,000 tons represented sulphur recovered from sour natural gas and refinery gases, 400,000 tons sulphur contained in pyrite, and 400,000 tons sulphur in various forms from other sources.

Consumption of sulphur during the year remained high, paralleling general business activity. The fertilizer industry continued as the largest user of sulphur, consuming about one-third of the domestic supply. Other industries requiring substantial quantities of sulphur included chemicals, paints and pigments, iron and steel, pulp and paper, rayon and film, and petroleum.

Exports of United States sulphur to foreign countries increased substantially over the previous year. On the basis of figures for 10 months, it is estimated that exports for the year approximated 1,600,000 tons compared with 1,242,000 tons in 1953. The United Kingdom and Canada received the largest amounts; other major recipients were France, Australia, New Zealand, Brazil, the Union of South Africa, and Belgium.

An important development of the year was the start of sulphur production on the Isthmus of Tehuantepec in Mexico. This marked the first use of the Frasch process outside of the United States. Mexican Gulf Sulphur began production at San Cristobal dome in March, and Pan American Sulphur Company at Jaltipan dome in September. In addition, Gulf Sulphur Company began construction of a Frasch process mining plant at Salinas dome.

The 1954 United States production record was largely the result of a series of efforts begun about five years ago to increase sulphur productive capacity. During the period six new Frasch mines were developed, and the number of undertakings to obtain sulphur from other sources was greatly multiplied.

Most of the projects undertaken in this expansion program have been completed, although some efforts are still in progress. Among these are a Frasch process mine which Freeport is completing at Chacaboula dome in Louisiana, as well as several projects to recover sulphur from sour natural gas and refinery gases.



# TIN



By **ROBERT J. NEKERVIS**  
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The International Tin Study Group in summarizing the tin position in 1954 points out that the following comments are based partly on estimates, particularly in

the field of consumption; they should, therefore, be used with caution. All tonnage figures reported are in long tons.

World mine production of tin-in-concentrates in 1954 is estimated at 166,500 tons (excluding China) as compared with 170,000 tons in 1953 (excluding China); this is a decrease of 2.1 percent. Production increased in Malaya and Indonesia and decreased in Bolivia, the Belgian Congo, Thailand, and Nigeria.

Both in Malaya and Indonesia production reached in 1954 post-war records: Malayan output was 60,691 tons or 7.9 percent more than in 1953, and Indonesia produced 35,861 tons or 6.0 percent more than in the previous year. Provisional estimates of Bolivian exports at 28,500 tons and of Belgian Congo production of 12,800 tons are equivalent to decreases of 18 and 16 percent respectively. Thailand production in 1954 decreased 3.5 percent to 9,775 tons, and Nigerian production with the same percentage to 7,900 tons.

World tin metal production decreased 1.0 percent from 174,000 tons (excluding China) in 1953 to 173,000 tons in 1954. There were substantial increases of production in Malaya, and Belgium and substantial decreases in the United States, and the Belgian Congo.

Malayan smelter output in 1954 reached a post-war record of 71,166 tons; this was not only due to the increased mine production in Malaya but also to higher imports from Thailand which sent the bulk of its concentrates in 1954 to Malaya instead of to both Malaya and the United States as in previous years. United Kingdom production decreased to 27,475 tons (4.8 percent lower) and Netherlands output in 1954 is estimated at 27,900 tons (a 3.5 percent increase). The production of the Texas City, Texas smelter slowed down substantially during the middle of the year owing to the uncertainty as to the continuation of its operation. As a result production dropped 28.1 percent to 27,001 tons.

Exports of tin metal from Malaya in 1954 were 70,277 tons, another post-war peak. Of this quantity 40,404 tons went to the United States.

World consumption of tin metal (excluding China) in 1954 is estimated at 135,000 tons against 129,500 tons in 1953; that is, an increase of 4.2 percent. This is partly a result of the increased tinplate production which used 61,000 tons of tin in 1954 as compared with 57,000 tons in 1953. In the United States consumption increased in 1954 to 55,000 tons. There were also increases in the United Kingdom to 20,950 tons, in France to 8,050 tons, in Western Germany to 6,250 tons, and in Japan to 4,800 tons. Denmark became an important exporter of high-grade tin alloys and as a consequence consumption increased from 2,650 tons in 1953 to 4,080 tons in 1954. In the Netherlands, however, the high-grade alloy trade slowed down and as a result consumption of tin in 1954 decreased to 3,500 tons.

Prices which had fluctuated substantially in the period January to April, 1954 were thereafter rather stable under the influence of the forthcoming Tin Agreement, until the month of December 1954 when they lost ground again. Cash tin in London fluctuated between £643.0 (81.62 cents per pound) and £825.0 (103.12 cents per pound) per ton during January to April and in the range of £710.0 (88.75 cents) to £771.0 (96.37 cents) during May to November. In December cash tin dropped to a new low of £681.0 (85.12 cents). Forward tin in London and prompt tin in New York followed roughly the same pattern.

Prospects for the consumption of tin in the United States in 1955 have been estimated in a number of surveys of probable United States metal consumption made by the Business and Defense Services Administration of the United States Commerce Department.

Concerning tin, the Secretary of Commerce, Mr. Sinclair Weeks, reported: "A 5.0 percent increase in domestic consumption in 1955 over the estimated 56,000 tons consumed in 1954 is anticipated. The International Tin Agreement is expected to be put in operation in 1955. Under this agreement a buffer stock of 15,000 to 25,000 tons of tin metal is to be es-

tablished. This buffer stock, plus insulated metal produced in the United States, together with possible increased world consumption, should about balance world supply and requirements."

Mr. A. J. D. C. Loch, Federation of Malaya acting Member for Economic Affairs, in a press interview in January 1955 discussed prospects for tin in 1955. He said that he thought the average price over the year would be around the then present level, about £672 (84 cents per pound) a ton. He qualified his statement by saying there might be a lower price if there was delay in the International Tin Agreement coming into effect, and that the price might not be higher when the agreement did come into force.

# TITANIUM



By **C. I. BRADFORD**  
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The major achievement of the United States titanium industry for 1954 was the doubling of production of titanium sponge. In 1953, 2,250 tons of sponge were produced; while, in 1954,

the best current estimate is 5,300 tons. This more than doubling of sponge output is a significant step toward the Office of Defense Mobilization's goal of 22,000 tons per year and will allow the airframe and jet engine manufacturers to make greatly increased use of the strength-to-weight advantages of titanium and titanium alloys. It is expected that the sponge production goal of 9,000 tons for 1955 will be met.

The diversion of considerable sponge to the government rotating fund stockpile has greatly eased the concern of the aircraft industry, which has been reluctant to design too much titanium into new planes without assurance of adequate supply in the event of a national emergency.

Sponge producers during 1954 included E. I. du Pont de Nemours & Company, Inc., Newport, Delaware; Titanium Metals Corporation of America, Henderson, Nevada; and the United States Bureau of Mines. Expected to enter the sponge production picture shortly are Dow Chemical Company, Midland, Michigan; Cramet, Inc., Chattanooga, Tennessee; and Union Carbide and Carbon, with a new installation under construction at Ashtabula, Ohio. Production by these companies will bring annual output up to over 22,000 tons per year.

Virtually all of the 1954 sponge was produced by a modified Kroll process—that is, the magnesium reduction of titanium tetrachloride. Promising new methods are under study but will probably still be in the development stage during 1955.

Producers of mill products during 1954 were Rem-Cru Titanium, Inc., Midland, Pennsylvania; Titanium Metals Corporation of America, Henderson, Nevada; Mallory-Sharon Titanium, Inc., Niles, Ohio; and Republic Steel Corporation, Massillon, Ohio.

Production of titanium mill products after several years of record expansion leveled off during 1954. Total production is estimated at 1,250 tons. The most important reason for the leveling off is the necessarily long time lag between authorization for additional use of titanium and the actual purchase of the material by the aircraft industry for production use. Several factors point the way to a greatly increased demand for titanium mill products, and the producers have already formulated expansion programs to meet this demand.

FIRST, the current and planned production of sponge has removed the major deterrent to increased use by the airplane and engine manufacturers.

SECOND, major improvements in the quality of titanium mill products were made during 1954. Hydrogen, a potential embrittling impurity, has been controlled and held to a minimum. Variability of properties has been greatly reduced. Sheet flatness has been greatly improved, a vital factor in the use of titanium in aircraft skins.

THIRD, the intensive research effort to develop improved and totally new titanium alloys is continuing under government contract and independently in the research laboratories of the producers of mill products. A tangible result of new alloy research was the introduction of Rem-Cru A-110AT, the first high strength weldable titanium alloy, early in 1954. De-



velopment of such improved alloys is extending the application of titanium in the aircraft and guided missile field.

A healthy development of the industry in 1954 was the diversification of the end use of titanium. At the beginning of 1954, the only tonnage non-military application of titanium was Douglas Aircraft Company's use of titanium for nacelles and firewalls in the commercial airliner, the DC-7. In March 1954, the Business and Defense Services Administration of the Department of Commerce issued Order M-107, allowing the producers to channel 10 percent of the output into non-defense end uses. Assured of an adequate supply, the industrial manufacturers faced with severe corrosion and erosion problems renewed their interest in the unique resistance of titanium to chemical attack. Tonnage applications in the chemical, marine, petroleum, and paper industries appear likely in 1955.

The increased sponge production and improved quality of mill products highlighted 1954. In 1955, continued progress toward the Government's 22,000-ton sponge goal is anticipated and a sharp increase in mill products. The tonnage figures of sponge and mill products are particularly impressive when we recall that only seven years ago ductile titanium was produced only as a laboratory curiosity.

## TUNGSTEN



By WORTHEN BRADLEY  
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In scanning 1954 domestic tungsten statistics, it is alarming to note a certain coincidence: production shot upward and consumption plummeted downward, both by about the same percent-

age (46 and 47 percent, respectively). The accompanying table points this up. All tungsten quantity figures, in table and text, are in short tons units of WO<sub>3</sub>.

The 1954 world price ranged from \$15 to \$33 per short ton unit, before duty; for most of the year it was \$24 to \$28. This was close to the 1953 average of \$28, but there was nothing comparable to 1953's high of \$52.50; and, of course, nothing approaching the GSA price in the United States of \$63 (with the exception of certain United States Government contracts with foreign producers, which are understood to be at a rate close to that figure).

The GSA Domestic Tungsten Purchase Program continued to accelerate: purchases to the end of 1954 amounted to 1,460,051 units. The 3,000,000 unit program will be completed in late 1956 (estimates, based on the recent buying rate, vary from as early as August, to the end of the year). Representatives of the domestic producing industry have, quite naturally, been recommending that the GSA program be extended. If it is not, and if the industry is forced to accept the world price (plus duty) for its product, practically all domestic mines will shut down. Worse than that, before the shutdown there will be a slowdown of development work and, of course, some gouging of whatever good ore may be remaining. The result would be a devastated industry, whose mines would be in no shape to resume operation in some future emergency.

There have been hints from government officials that the buying program may be extended on a lower-price basis. Expressions such as a "domestic mobilization base" and "separating the men from the boys" have been heard in convention halls and at speakers' tables. Bills have been introduced extending the purchase programs of several minerals, including tungsten, to 1963.

Domestic production, all of which went to the GSA, hit an all time high for one year. North Carolina's Hamme mine continued as the largest individual producing property, and United States Vanadium Company's Pine Creek concentrator again led the mill operations in capacity and output. The Ivanhoe, an open pit mine near Glen, Montana, is one of the more important new producers.

For the first nine months of 1954, 71 percent of the general import total came from Korea, Bolivia, Spain, Portugal, and Australia, in that order. During the year the South Korea (Republic of Korea) tungsten mines were closed down as their United States contracts ran out. It is understood that, since then, some of these properties have reopened and have offered their production on the world market.

## Supply and Consumption of Tungsten In United States in 1953 and 1954 as Measured in Short Ton Units of WO<sub>3</sub>

Period	Domestic Mine Production (a)	General Imports (b)	Total Supply (a) + (b)	Consump- tion	Total Industry Stocks at End of Period
1954, Estimated	826,000	1,387,000	2,213,000	258,500	260,771*
1953, Year	566,800	1,828,047	2,394,847	487,622	296,205

\* As of September 30, 1954.

The domestic industry dug in for another battle when it learned that, in the proposed trade agreements negotiations with Japan, a reduction of tungsten duties will be considered. Since Japan has no tungsten industry to speak of, it is assumed she would procure her supply from Red China (for resale to the United States).

Several reports of foreign tungsten illegally sold to the GSA under the Domestic Program, unfortunately tend to substantiate a warning made in this column a year ago.

Domestic exploration under the DMEA program continued at a high rate in 1954.

## URANIUM



By WILLIAM J. WAYLETT  
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Division of Raw Materials  
United States Atomic Energy  
Commission  
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The uranium boom continued unabated during 1954 with exploration and ore production at record heights.

The position of the United States as a producer of uranium was described by Jesse C. Johnson, director, Division of Raw Materials, Atomic Energy Commission, in a recent report to the Joint Congressional Committee on Atomic Energy as "one of the world's leading uranium producers." The domestic uranium industry now has an annual value of over \$100,000,000 with more ore being produced each month than was realized during all of 1949. Since that time the number of mines has increased from 15 to over 900 and the number of large orebodies, (over 100,000 tons) has increased from two to about 20, with some 1,000,000 ton deposits.

Exploration activities of the Commission continued at about the same levels as in 1953. As a result of increased private exploration and prospecting and the discovery of uranium ore in new areas, the Commission established several new exploration field offices during 1954. These were at Bakersfield, California; St. George, Utah; and at Las Vegas and Reno, Nevada. In addition, the Douglas, Wyoming office was moved to Casper, in order to be closer to the scene of recent developments in central Wyoming.

In August the Commission closed its exploration headquarters in New York and moved the function and the staff of that office to the Washington headquarters of the Commission. The directory in the Federal Agency section contains a list of all exploration field offices.

In the legislative field new laws were enacted in 1954 which affect the uranium mining industry. Public Law 585—83rd Congress, which became law on August 13, makes it possible to establish mining claims on certain public lands which were not previously open to the location of mining claims because said lands were affected by the Mineral Leasing Act of 1920, as amended. This eliminated the need for the issuance of leases under Domestic Uranium Program Circular 7 and the Commission terminated this Circular as of December 12, 1954. Circular 7 was established by the Commission on January 29, 1954 to provide a means for obtaining production of uranium ore from lands affected by the mineral leasing laws. Public Law 585 also provided means for validating certain mining claims located between December 31, 1952 and February 10, 1954 on these same public lands.

Both Public Law 585 and Public Law 703—83rd Congress, the Atomic Energy Act of 1954, eliminated the provision of

the Atomic Energy Act of 1946 which reserved to the United States uranium located in the public domain.

Under the Revised Internal Revenue Code of 1954, which became law on August 16, 1954, the depletion allowance for uranium and some other types of minerals was increased from 15 percent to 23 percent. The new code also increased from \$75,000 to \$100,000 the sum that may be deducted for mine exploration expenditures, deductible currently, or over a four year period.

Since March 1951 and through the end of December 1954, a total of \$4,377,173 has been disbursed by the Commission in bonus payments for initial production of uranium ore from eligible mining properties under the Commission's Domestic Uranium Program Circular 6. The total number of payments was 2,680 and of these 78 properties received full benefits totaling \$35,000. The amount paid in the calendar year of 1954 was approximately \$1,800,000.

Under the AEC Uranium Access Road Program, a total of 902 miles of access roads have been constructed or improved at a cost of \$5,711,130 in Colorado, Utah, Arizona, New Mexico, and South Dakota. This was during the three year period ending June 30, 1954. During the current fiscal year, about 170 miles of roads are to be constructed or improved in Colorado and Utah at a cost of approximately \$2,500,000. Most of the funds have been provided by Federal sources. Recommendation of projects is made by the AEC, with the Federal Bureau of Public Roads supervising engineering and construction.

Canadian exploration and mining activity continued to expand and Canadian uranium production reached new levels. Overseas, the famous Shinkolobwe mine in the Belgian Congo retained its place as one of the world's important uranium producers. South African production continued its rapid growth and Australia joined the ranks of free nations producing uranium. French efforts to increase uranium output from Metropolitan France met with growing success and exploitation of thorium-uranium deposits in Madagascar was undertaken. Portugal maintained uranium production at its Urgeirica mine and Sweden recovered a small quantity of uranium from its extensive shale deposits.

Plants were completed in the Union of South Africa by Randfontein Estates Gold Mining Co., Ltd., Luipards Vlei Estate and Gold Mining Co., Ltd.; Vogelstruisbult Gold Mining Areas; and Welkom Gold Mining Co., Ltd., bringing to eight at year-end, the number of plants now in operation recovering uranium as a byproduct of gold ore mined on the Witwatersrand. Additional plants are under construction.

The Lake Athabasca area in northern Saskatchewan was the principal scene of production in Canada during 1954 with the Beaverlodge mill of the Crown-owned Eldorado Mining and Refining Co., Ltd., being expanded to handle the increasing ore output of the Beaverlodge area. Eldorado's Port Radium mine on Great Bear Lake in the Northwest Territories operated continuously. Eldorado is still the sole concentrate producer in Canada, although several private companies are producing ore in the Beaverlodge area. These include Rix-Athabaska Uranium Mines, Consolidated Nicholson Mines, and Nesbitt-LaBine Uranium Mines.

Another company, Lorado Uranium Mines, Ltd., has been conducting extensive underground development on property in the Beaverlodge area and may be the site of a new milling operation. At the Verna shaft, near the Ace mine, Eldorado is exploring on three levels by drifting, cross cutting and diamond drilling, mineralization in its own ground and in the adjoining Radiore property on which it holds a lease.

Also in the Beaverlodge area, Gunnar Mines is developing an open pit mine and erecting a leaching plant at the mine which is expected to be in operation late in 1955. This will be one of the important uranium operations on the continent, and the plant will be the first built with private funds in Canada.

Elsewhere in Canada, large tonnages of relatively low grade ore have been outlined in the Blind River district of Ontario by Pronto Uranium Mines, Ltd., and Algom Uranium Mines, Ltd. Pronto has commenced the construction of its own concentrator which is expected to be in production late in 1955. Large plants will also be built by Algom at its Nordic and Quirke Lake properties. In the Bancroft region of Ontario, prospecting and exploration have indicated large, but low-grade, ore bodies. Among the most active companies in the area during 1954 were Centre Lake Uranium Mines, Croft Uranium Mines, Faraday Uranium Mines, and Dyno Mines.

Ore produced from White's and Dyson's open pit mines and other deposits in the Rum Jungle area of Australia is being treated at the newly constructed uranium processing plant built by Territory Enterprises, Pty. Ltd., a wholly owned subsidiary of Consolidated Zinc, Pty. Ltd. The plant was opened on September 17, 1954, and is treating both surface oxidized ore and deeper primary ore containing pitchblende and copper sulphides.

A copper flotation concentrate is being reduced in addition to uranium concentrates.

Other deposits in the Rum Jungle area are also expected to contribute ore to the new plant. An occurrence of promise is being explored in the Alligator River district, 70 miles east of Rum Jungle. South of Rum Jungle, the Northern Australian Uranium Cooperation has been active in the Coronation Hill area. Several other companies are carrying on ground and aerial reconnaissance.

Another Australian area showing promise is the Mt. Isa-Cloncurry district of Queensland where active airborne and ground prospecting and development by private interests has been in progress during 1954. Leading companies active in the area include Australasian Oil Exploration, Ltd., Isa Uranium Syndicate, and United Uranium.

At Radium Hill, in South Australia, the shaft is down 750 feet, and it is planned to deepen it to 2,000 feet at a later date. Davidite ore associated with ilmenite is being treated by heavy media separation at a concentration plant opened in October, 1954. Concentrates are stockpiled for later treatment at the Port Pirie chemical leach plant, now under construction and scheduled for completion by mid-1955.

Exploration for uranium continues in a number of other countries. The Philippine Iron Mines, Inc. reported a discovery of uranium at Larap, Camarines Norte, Luzon, and the company is exploring the occurrence further.

In South America prospecting activity is increasing in Argentina, Brazil, Bolivia, Chile, and Peru. A price schedule for uranium ores was established in Peru by the Junta de Control de Sustancias Radioactivas, and Bolivia established a Comision de Minerales Radioactivas to encourage prospecting. Numerous uranium occurrences were reported in South America and some ore production was reported in Argentina.

Returning to the domestic scene the Colorado Plateau is still the center of the uranium mining industry with the Black Hills region of South Dakota, and Wyoming; the Colorado Front Range; Marysvale, Utah; and Central Wyoming contributing varying, but significant, ore output. California, Nevada, and Washington saw the first uranium production within their borders.

Principal operators in the Big Indian Wash area in San Juan County, Utah include the Ute Exploration Company, Homestake Mining Company, Cal Uranium Company, North American Uranium Company, Continental Uranium Company, and Standard Uranium Company. Over 25 private drilling rigs operated in the district during the year as intensive exploration of the area continued.

Shafts were sunk in the Uravan Mineral Belt by the Golden Cycle Corporation and the Worcester Mines on their A.E.C. leases and by Shattuck-Denn Mining Company on its own property. The oldest uranium producing area on the Colorado Plateau, the Uravan Mineral Belt is a principal source of uranium with a large number of large and small operations.

Vanadium Corporation of America produced ore from its Monument No. 2 Mine near the Arizona-Utah mine in Navajo County, Arizona by underground and open pit methods. Marginal ore is being upgraded at a newly constructed concentrate prior to shipment to VCA's Durango mill. The Monument No. 2 is the largest of 40 mines operated by VCA.

In the Grants, New Mexico area the Anaconda Copper Mining Company is operating several mines, including the big Jackpile mine on the Laguna Indian Reservation. Ore is also being produced by the Haystack Mountain Development Company (Santa Fe Railroad), Holly Uranium Company, Alvis-Denison Construction Company, and several other operators in the area.

Off the plateau, Vanadium Corporation of America is producing ore from its Prospector Mine and from the property of the Bullion-Monarch Mining Company in the Marysvale, Utah District. Homestake Mining Company, Sodak Mining Company, and the Pictograph Mining Company are among the principal producers in the Black Hills Region of South Dakota and Wyoming. Kerr-McGee Oil Industries, Inc., operated several small mines in the Pumpkin Buttes area of Wyoming. The Lucky Mc Mining Company has blocked out substantial ore reserves in the Gas Hills region of Wyoming. Several small mines are being developed near Globe, Arizona.

Additional ore processing capacity was placed in operation during the year. Newest of the eight plants now in operation is the Shiprock, New Mexico plant at Kerr-McGee Oil Industries, Inc. Existing facilities at Durango and Uravan, Colorado; and at Monticello, Utah, were expanded by Vanadium Corporation of America; U. S. Vanadium Company; and the AEC respectively. The Monticello mill is the only government-owned mill and is operated under contract by the Galigher Company for the AEC.

New expansion programs are underway by Anaconda Copper Mining Company, at Bluewater, New Mexico; Vitro Uranium Company, at Salt Lake City, Utah; Climax Uranium Company,

at Grand Junction, Colorado; and Vanadium Corporation of America at Naturita, Colorado. An acid leach circuit is to be added to the Monticello mill and the H. K. Ferguson Company, has been selected to design and build the new section.

New ore-buying stations were established by the Commission at Moab and White Canyon, Utah, and at Riverton, Wyoming. Discussions pointed toward the construction of additional processing mills to serve the Big Indian Wash and White Canyon areas of Utah, the Monogram Mesa and Gypsum Valley area of Colorado, the Black Hills area of South Dakota and Wyoming, are underway.

Uranium is being recovered as a byproduct of treating phosphate rock from Florida. Newest plants were completed in Florida during 1954 by International Minerals and Chemical Corporation, and Virginia-Carolina Chemical Corporation. Construction of a fifth unit by U. S. Phosphoric Products Division of the Tennessee Corporation is to commence in 1955.

Tempo of uranium exploration by private interests were increased by several times during 1954. Ratio of private to government drilling was about 20 to 10, with the government drilling 1,125,000 feet. Airborne exploration by government and private planes was greatly stepped up. The Commission posted some 80 airborne anomaly maps during the year on the result of airborne surveys in nine states. The United States Geological Survey completed airborne surveys in South Carolina, Georgia, and Florida and maps are now available for sale from the Geological Survey.

Geophysical prospecting methods found wider application. In addition to the airborne radioactivity survey technique, radiometric logging of holes in conjunction with drilling is being widely applied and seismic shot holes are being radiometrically logged by petroleum companies. Research studies are continuing in geochemical and geobotanical prospecting techniques.

Looking ahead to 1955, uranium activity shows no sign of diminishing, and it appears certain that new levels of exploration and ore and concentrate production will be attained.

## ZINC



By OTTO HERRES  
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The year 1954 ended for the zinc industry of the United States with smelter production approaching record heights and mine output at the lowest level since

the depression years of the early 1930's.

As in the previous year, the zinc-lead mines again were forced to struggle against a flood of low-priced imports which threatened their very existence at a time when the country as a whole was enjoying great prosperity. The low mine output was the outgrowth of mine closings and production cutbacks during the past three years following heavy reductions in the price of zinc and lead caused by excessive imports of these metals and their ores and concentrates. Zinc and lead in a large measure come from the production of complex zinc-lead ores of the same mines.

Prime Western grade slab zinc dropped from 10 cents a pound, East St. Louis, at the beginning of the year to 9¢ cents in February. It remained at that low price until March when small advances carried it to 10¢ cents in May, 11¢ cents in June, and 11½¢ cents in September, at which level it remained during the opening months of 1955.

As to the effect of these low prices on the mines of the United States, industry experience was expressed as follows at the meeting of the American Zinc Institute at St. Louis in April, 1954—

While many of the mines operated by the larger companies are continuing to operate today, it is estimated that only approximately 225,000 tons annually of zinc can be produced today on a break-even or profitable basis on a 10-cent market. Less than half of this tonnage can be mined at a reasonable profit when capital charges, overhead, taxes, and depletion are considered. This means that at the 10-cent level, only approximately 25 percent of our nation's needs can be supplied from domestic mines on a break-even basis.

Only between 10 percent and 15 percent of our nation's needs can be supplied profitably at the 10-cent level.

Slab zinc consumption in 1954 was approximately 873,000 tons, a drop of some 113,000 tons from the record consumption of 1954, because of a falling off in demand early in the

year. But during the last quarter an upturn in business conditions generally and in the steel and automobile industries in particular brought about a substantial improvement.

Available supplies exceeded demand throughout the year. Slab zinc output of the nation's smelters amounting to 868,242 tons added to imports of approximately 150,000 tons, gave supplies of some 1,018,000 tons, or about 145,000 tons in excess of consumption. After deliveries of 108,957 tons to the Government stockpile and exports and drawbacks of 27,929 tons, a surplus of about 8,000 tons remained.

Some progress has been made in Washington since the domestic mining industry, united in the emergency that threatened it with destruction, first convened in Denver two years ago to urge legislation for its preservation.

A clear-cut case of injury has been established to a basic industry which is essential to the national defense and civilian welfare. No one in Washington has been able to dispute the facts. Rather the problem has become one of differing on what action should be taken to provide relief.

In May 1954, the U.S. Tariff Commission reported unanimously to the President that lead and zinc ores and metals were being imported in such increased quantities as to cause serious injury to the domestic industry. The bipartisan Commission recommended, "It is necessary that the rates of duty 50 percent above the rates existing on January 1, 1945 . . . be imposed for an indefinite period."

Because of opposition from the State Department the President did not follow the experienced advice of the Tariff Commission. But he did recognize the injury to the mining industry and the need of providing relief in his directive establishing a long-term stockpiling program for lead and zinc on August 20, 1954.

Earlier, in October 1953, the President had expressed concern over "depressed conditions within numerous metal mining districts" of the nation in setting up a special cabinet committee to determine how the United States can maintain sufficient raw materials to meet "any contingency during the uncertain years ahead."

And on November 30, 1954, a year after its appointment, the President's Cabinet Committee on Minerals Policy recommended an orderly but vigorous development of domestic mineral resources, warning that: "Mines of the future must be planned today—not a decade hence."

The most immediate problem of the zinc-lead mines is the low price of zinc. The President in his directive of August 20, 1954, stated that he is prepared to make appropriate recommendations to Congress if the objectives of adequate market prices and recognition by foreign countries that the stockpiling purchases are designed to help domestic production are not achieved. But since August the price of zinc has advanced only ½ cent, from 11 cents per pound to the current quotation of 11½ cents. For the first 11 months of 1954 an average of 43,321 tons of zinc a month from foreign ores in addition to an average of 13,021 tons of imported slab zinc, a total of 56,342 tons, entered U.S. consumption while the output of the mines at home was dropping to an average of 38,670 tons, the lowest since the depression years.

Excessive imports of foreign ores have been taking over a larger proportion of U.S. smelter production at the expense of the nation's mines. Domestic mine output of zinc has been reduced to less than 39,000 tons a month from an average of 60,000 tons a month in early 1952.

Purchases of zinc for the defense stockpile under the President's directive authorizing a long-term purchasing program resulted in deliveries of 17,218 tons in December. But the large tonnage of surplus metal on hand was reduced only 10,359 tons in the absence of any restrictions on foreign supplies flooding this country.

The problem is one of supply and demand. Stockpiling will not cure an excess supply of foreign lead and zinc flowing to this country. To the extent that it increases prices it will encourage more imports.

That leaves only one logical answer, namely, restrictions of excess imports, but only when they are offered at prices that will destroy the lead-zinc mining industry of this nation.


It is the belief of the domestic lead-zinc mining industry that an excise tax restricting excessive imports of lead and zinc is required if the objective stated by the President of a strong and vigorous domestic mining industry is to be achieved. The tax would be suspended for the protection of the consumer whenever the market reaches reasonable ceiling prices that will permit the industry to survive.

There are indications that the persistence of the mines in fighting for survival is beginning to have its effect. It is reliably reported that Washington now recognizes that the stockpiling program can only be a temporary help and that a long-range program must be developed to supplant stockpile purchases. The President and his cabinet advisers plan further and positive action to aid the domestic lead and zinc industries. So it is said.





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# A LOOK AT U. S. MINING IN 1954

## Alaska

### Production of Mercury, Tin, and Chrome Up

Alaska's mineral production for 1954 was equal to that of the previous year but slightly below the post-war peak of 1952. The estimated total production for 1954 was \$24,328,000. Gold remains the most important mineral, followed closely in value by gold, then sand and gravel, platinum, tin, mercury, building stone, chromite, silver, jade and copper, in that order.

Gold production appears to have reached a level of about 250,000 ounces annually, controlled, of course, by the adverse economic atmosphere plaguing this industry. Marked increases were noted in production of mercury, chromite, and tin.

Metal production increased considerably during 1954, resulting from the operations of United States Tin Corporation on the Lost River lode tin deposit, of the DeCoursey Mountain Mining Company's mercury production from the Red Devil mine, and chrome shipments by Kenai Chrome Company from the Red Mountain deposits.

Prospecting activities on the part of private enterprise increased tremendously in 1954. Large mining companies, as well as local groups, were represented in the field by qualified prospectors using geophysical and geochemical methods in addition to the old-time methods

of prospecting. These activities were concentrated on the search for iron, copper, mercury, nickel, and radioactive minerals. Literally hundreds of individuals and organized groups have obtained radioactive prospecting equipment, and although no commercial grade deposits have been uncovered, several "strikes" have been reported.

All but a few ounces of gold were produced from placer operations in 1954, only two lode mines having operated intermittently during the year. The United States Smelting Refining and Mining Company continued to be the major gold producer operating two dredges in the Nome area and six dredges in the Fairbanks district. Goodnews Bay Mining Company, the major platinum producer under the United States flag, continued operations on the usual scale in the Bristol Bay area.

The major activities throughout Alaska, other than precious metals, were as follows:

**Southeastern** United States Steel Corporation and W. S. Moore Company investigated iron deposits. Northwest Ventures and Coast Range Exploration Company examined copper and iron deposits. B. C. Mica Company developed the mica deposits on Sitklan Islands. Admiralty Alaska Gold Mining Company continued exploration of the nickel-copper Mertie lode on Admiralty Island. Limestone deposits were staked.

**South Central** Kenai Chrome Company shipped 3,000 long tons of chromite ore from the Red Mountain deposits near Seldovia, Kenai Peninsula. The Seldovia Chrome Company explored deposits in the same area and made a small

test shipment. Underground exploration was conducted on the Maclaren River copper prospect by Alaska Copper Mines, Inc. Strandberg and Sons explored copper deposits in the Talkeetna Mountains. Northern Pyrites Company completed an electromagnetic survey of two sulphide deposits on Latoche Island, Prince William Sound. Two uranium "strikes" have been reported in this region and claims staked, but no commercial grade ore as yet discovered.

**Yukon Basin** The DeCoursey Mountain Mining Company produced 1,000 flasks of mercury from the Red Devil mine in 1954, up until a disastrous fire wiped out their surface plant late in the year. A Canadian company has just taken over this operation, including others in the Kuskokwim Valley, and plans an expanded exploration program for 1955.

**Seward Peninsula** The United States Tin Corporation produced 170 long tons of tin concentrates which were shipped from their lode mine and mill operation at Lost River, 90 miles northwest of Nome.

## Arizona

### Copper Production Down; Three New Open Pits

Arizona's 1954 production of copper, gold, silver, lead, and zinc was valued at \$239,974,194, compared to \$242,572,489 in 1953. Production declines of 4 percent in copper and 21 percent in zinc were responsible for the loss.

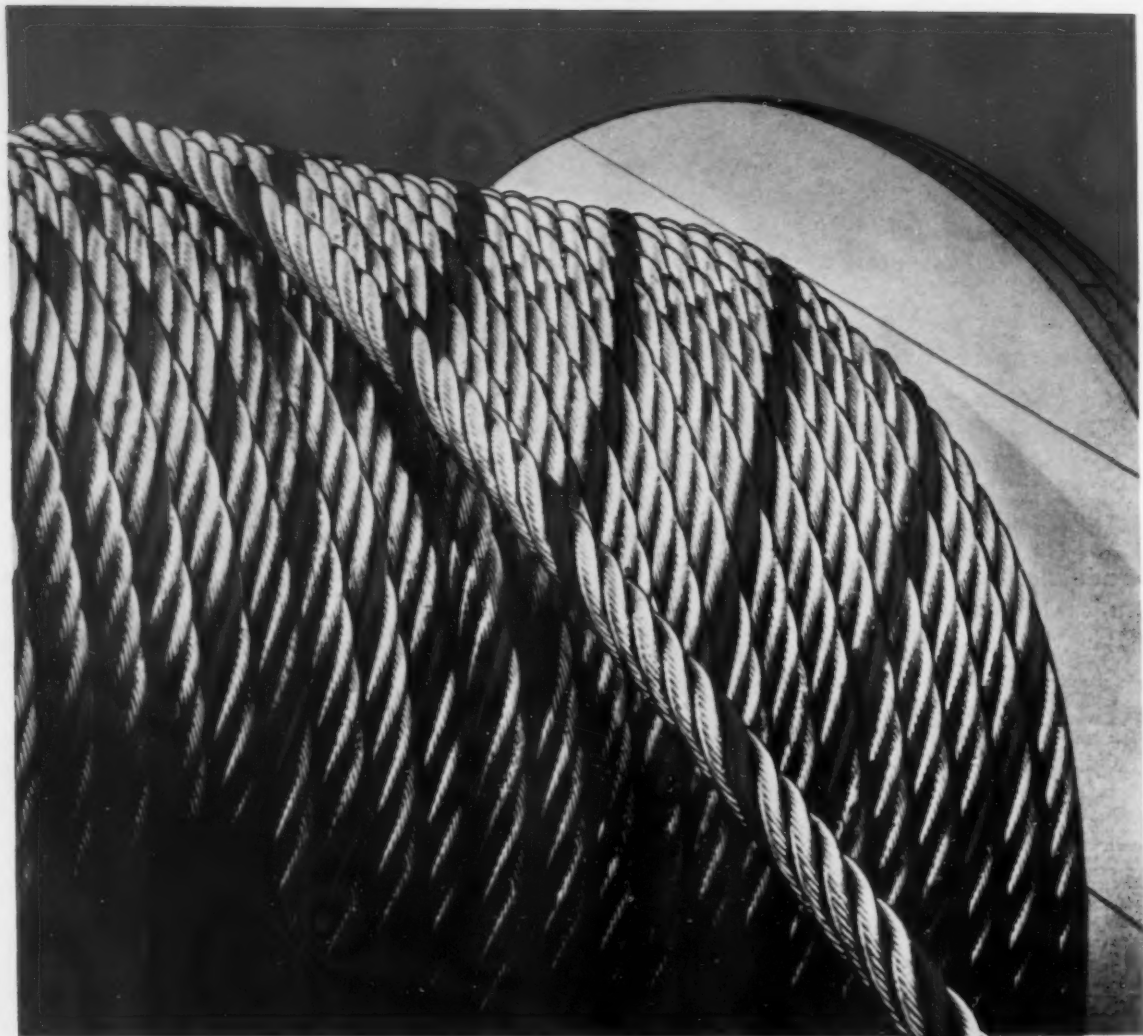
Arizona continued to hold first place in copper production with an output of 378,500 short tons. Curtailment by some major operations early in the year, and shutdown caused by strikes in August and September, more than off-set the 30,000 tons produced by the state's three new copper mines. The new producers, all open pits, are: Silver Bell of American Smelting and Refining Company, Lavender Pit of Phelps Dodge Corporation, and Copper Cities Mining Company.

Open-pit mining again dominated the production picture, with 71 percent of the state's copper being mined at eight open pits. Morenci Branch of Phelps Dodge Corporation remained the state's largest producer.

Mineral Production of Alaska from 1952 through 1954

	1952		1953		1954*	
	Quantity	Value	Quantity	Value	Quantity	Value
Antimony ore <sup>1</sup>	420	(5)	—	—	—	—
Chromite <sup>2</sup>	—	—	—	—	3,360	\$146,000
Clay <sup>3</sup>	—	—	—	—	—	(2)
Coal, bituminous <sup>4</sup>	686,218	\$5,779,423	861,471	\$8,451,542	666,000	8,162,500
Gold <sup>5</sup>	240,557	8,419,495	253,783	8,882,405	252,794	8,847,790
Lead <sup>1</sup>	1	386	9	2,240	—	—
Mercury <sup>3</sup>	28	5,575	40	7,721	1,023	270,584
Sand and gravel <sup>1</sup>	10,781,926	8,650,582	7,689,014	5,079,681	7,750,000	5,119,710
Silver <sup>2</sup>	32,986	29,814	35,387	32,027	35,140	31,803
Stone <sup>1</sup>	(5)	(5)	47,086	169,711	49,000	176,610
Tin <sup>4</sup>	82	220,956	49	105,917	170	342,000
Tungsten	—	—	—	—	—	—
(60% concentrates) <sup>1</sup>	8	(5)	(6)	(5)	—	—
Undistributed <sup>6</sup>	—	3,195,336	—	1,520,782	—	1,231,330
Total	—	\$26,302,000	—	\$24,252,000	—	\$24,328,000

\* Estimated 1. Short tons. 2. Fine ounces. 3. Flasks. 4. Long tons. 5. Value included with undistributed. 6. Includes platinum, gem stones, and other minerals whose values must be concealed to avoid disclosing individual company incomes.



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# Arizona Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	315,392	7,498,260	326,317	15,638	16,493	\$ 97,638,310
1942	253,651	7,064,467	393,387	14,772	18,522	114,525,600
1943	171,810	5,713,889	403,181	13,727	19,677	121,212,902
1944	112,162	4,394,039	358,303	16,707	29,077	113,094,806
1945	77,223	3,558,216	287,203	22,867	40,226	95,963,006
1946	79,024	3,268,765	289,223	23,930	43,665	114,986,254
1947	95,860	4,569,084	366,218	28,566	54,644	182,752,537
1948	109,487	4,837,740	375,121	29,899	54,478	196,207,948
1949	108,993	4,970,736	359,021	33,568	70,658	177,894,134
1950	118,313	5,325,441	403,301	26,383	60,480	201,033,694
1951	116,093	5,120,985	415,870	17,394	52,999	235,289,045
1952	112,355	4,701,330	395,719	16,520	47,143	220,686,278
1953	112,824	4,351,429	393,525	7,092	19,613	242,572,489
1954 <sup>1</sup>	113,500	4,335,000	378,500	8,900	21,750	240,037,194

<sup>1</sup> Estimated by U. S. Bureau of Mines.

Kennecott Copper Corporation announced plans for closing all underground mining at its Ray Mines Division in January 1955. Pit production will be increased to equal that previously mined by underground and open-pit methods.

Development work continued at the San Manuel Copper Corporation, scheduled for production in 1956. Complete mining, milling, and smelting facilities, geared to a 35,000-ton daily capacity, are under construction, and will make San Manuel the largest underground copper mine in existence.

Exploration and development work by Pima Mining Company indicate a medium-large but low-grade copper orebody which offers attractive possibilities for open-pit mining. The Pima orebody was discovered by geophysical prospecting.

Gold production in 1954 amounted to 113,500 fine ounces, 82 percent of which was recovered by a by-product from the treatment of copper ore. Silver production totaled 4,335,000 fine ounces, with 77 percent recovered from copper ore.

Lead and zinc activities declined for the fifth consecutive year, and the number of producers dropped from 40 to 12 in the same period. Three regular producers supplied the major portion of the state's 1954 lead production of 8,900 tons, and five properties the bulk of the 1954 zinc production amounting to 21,750 tons.

Manganese production, up 39 percent over 1953, had an estimated value of over \$9,000,000. All production was marketed at the government's purchase depots at Wenden (Arizona) and Deming (New Mexico). A drastic drop is indicated in 1955 as the Wenden depot probably will close in April when the station's quota of 6,000,000 long ton units of recoverable manganese is filled.

Molybdenum—1,460,000 pounds recovered as a by-product from copper ores—added \$1,438,100 to the value of Arizona's metal production. Tungsten production amounted to 7,000 units, valued at \$411,500.

Uranium production came primarily from the Navajo Indian Reservation in Apache County, with some production reported from Navajo, Coconino and Gila counties. Activities on the Navajo reservation were stepped up and further increases planned following completion of the \$3,000,000 mill at Shiprock, New Mexico, by Navajo Uranium Division of Kerr-McGee Oil Industries to treat ores from its operations near Cove, Arizona. Vanadium Corporation of America started construction of a concentrator for low-grade vanadium-uranium ores from its mines on the reservation. This reportedly will be the first full-scale operation on concentrating ores below the AEC grade schedule for raw ores. Discoveries of radioactive material were reported

from practically every section of the state, and prospecting activities reached a new high. Development and production plans, in most instances, await AEC's decision on an ore-buying station for Arizona.

In nonmetallics, principal interest centered in asbestos. Fiber from 15 properties was marketed at the GSA purchase depot at Globe. Altogether, the nonmetallics added \$12,448,000 to the state's mineral output.

As reported by the U. S. Bureau of Mines, Arizona's 1954 mineral production of metals and nonmetallics—exclusive of uranium and manganese—had an estimated value of \$254,344,000.

## California

### Interest Centers on Hg, WO<sub>3</sub>, Mn, Cr, and U<sub>3</sub>O<sub>8</sub>

California's production of metallic ores and metals declined from a gross value of \$39,410,000 in 1953 to an estimated \$38,246,000 for 1954.

The past year saw many new producers of tungsten. Production rose from 142,395 units of 60 percent WO<sub>3</sub> in 1953 to approximately 181,400 during 1954. The state's largest producer continued to be the United States Vanadium Company located in the Bishop area.

Manganese ore production increased from 17,024 short tons in 1953 to an estimated 35,000 tons in 1954. Most of this was shipped to the GSA purchasing depot at Wenden, Arizona.

As a result of the higher price for mercury, output rose to an estimated 11,750 flasks as compared to 9,290 in 1953. Some of the largest producers were New Idria Mining and Chemical Co., Idria; Sonoma Quicksilver Mines, Inc., Guerneville; and California Quicksilver Mines, Inc., Williams.

Chromite production increased from 26,512 short tons in 1953 to an estimated 28,800 tons in 1954. The greater part of this was shipped to the GSA purchasing depot at Grants Pass, Oregon. The Castro Chrome Associates mine near San Luis Obispo is the largest chrome producer in California and the second largest in the United States.

Iron ore output, principally that of the Kaiser Steel Corporation mine at Eagle Mountain, decreased from 1,698,000 gross tons in 1953 to approximately 1,250,000 tons in 1954. This was due largely to lower steel production at Kaiser's mills at Fontana and the increased use of scrap steel at this plant. Also, beneficiation of some of the ore resulted in a higher-grade product being sent to the blast furnaces.

Sulphur from the Leviathan mine, Alpine County, owned by the Anaconda Copper Mining Company, was mined during the summer months and trucked to Anaconda's copper mine at Yerington, Nevada.

Production of gold remained about the same as that of 1953. Output of silver, lead, and zinc dropped because of the closing down of the Anaconda Copper



THE SHAFT HEADFRAME and 80-ton ore bin of the Pima Mining Company mark a new copper development for the southwest. Mine cars are hoisted in the cage and dumped by the rotary mechanism at the top of the bin. Ore is trucked to the rail head.

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# California Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	1,408,793	2,154,188	3,943	3,464	440	\$52,231,066
1942	847,997	1,450,440	1,058	5,151	613	31,771,607
1943	148,328	609,075	8,762	5,820	1,856	9,176,616
1944	117,373	778,936	12,721	5,682	8,453	10,933,495
1945	147,938	986,798	6,473	7,224	9,923	11,152,081
1946	356,824	1,342,651	4,240	9,923	6,877	18,788,664
1947	431,415	1,597,442	2,407	10,080	5,415	21,769,620
1948	421,473	724,771	481	9,110	5,325	20,294,093
1949	417,231	783,880	649	10,318	7,209	20,616,562
1950	412,118	1,071,917	696	15,831	7,551	22,081,859
1951	339,732	1,145,219	921	13,967	9,602	21,700,575
1952	258,176	1,099,658	800	11,199	9,419	17,151,792
1953	234,591	1,036,072	382	8,664	5,358	12,870,230
1954 <sup>1</sup>	235,386	306,072	340	2,330	1,313	9,642,727

<sup>1</sup> Estimated by U. S. Bureau of Mines.

Mining Company's Darwin mine, Inyo County, in early 1954 due to the low lead and zinc prices.

The uranium rush also hit California in 1954, with over 6,000 claims being filed during the year. One carload of uranium-bearing ore was shipped in 1954 by the Miracle Mining Company from its claims located in the Mineral Springs area of Kern County. Miracle Mining later sold the 400-acre claim to the Wyoming Gulf Sulphur Company for \$1,000,000, \$35,000 of which was cash and the remainder to be received as a 12 percent gross royalty. Wyoming Gulf Sulphur plans rapid development of the property in 1955.

Western Oil and Chemical Co. has purchased claims near those of Wyoming Gulf Sulphur and is stockpiling uranium ore as weather permits them to operate.

## Central Tri-State Output Up; Fluorspar Mines Idle

Mine production of zinc and lead in the Tri-State district of Oklahoma, Kansas, and southwest Missouri increased seven percent in 1954 over that of 1953. In 1954 59,550 tons of recoverable zinc and 15,940 tons of recoverable lead were produced. About seven mine mills and 60 mines were operating in the Tri-State district during 1954; five mines in southwest Missouri, 35 in Oklahoma, and 20 in Kansas. The Eagle-Picher Company was the district's largest producer followed by American Zinc, Lead and Smelting Company, and National Lead Company.

Missouri continued in 1954 as the nation's largest lead producing state for the

47th consecutive year. St. Joseph Lead Company was the major producing company. Lead production was slightly less than that of 1953, but the value was greater. All major producers in southeastern Missouri operated steadily throughout the year and maintained exploration and development projects. The Indian Creek mine in Washington County, St. Joseph's main lead reserve, began active production in 1954. The ore was concentrated in their new mill located on the mine property.

Production of zinc declined in Missouri during 1954 as the Quick Seven operation of the American Zinc, Lead & Smelting Company in the southwestern part of the state was closed permanently due to depleted ore reserves. Missouri's output of iron, copper, and silver also decreased in 1954, as compared to 1953.

The nonmetals again accounted for the major portion of Missouri's total min-

## Kansas Production of Lead, and Zinc from 1941 Through 1954

Year	Lead Tons	Zinc Tons
1941	14,538	71,403
1942	9,419	55,874
1943	9,213	56,944
1944	9,394	63,703
1945	7,370	48,394
1946	6,445	47,703
1947	7,285	41,497
1948	8,386	35,577
1949	9,772	29,433
1950	9,487	27,176
1951	8,047	28,904
1952	5,916	25,482
1953	3,347	15,515
1954 <sup>1</sup>	3,300	14,650

<sup>1</sup> Estimated by U. S. Bureau of Mines.

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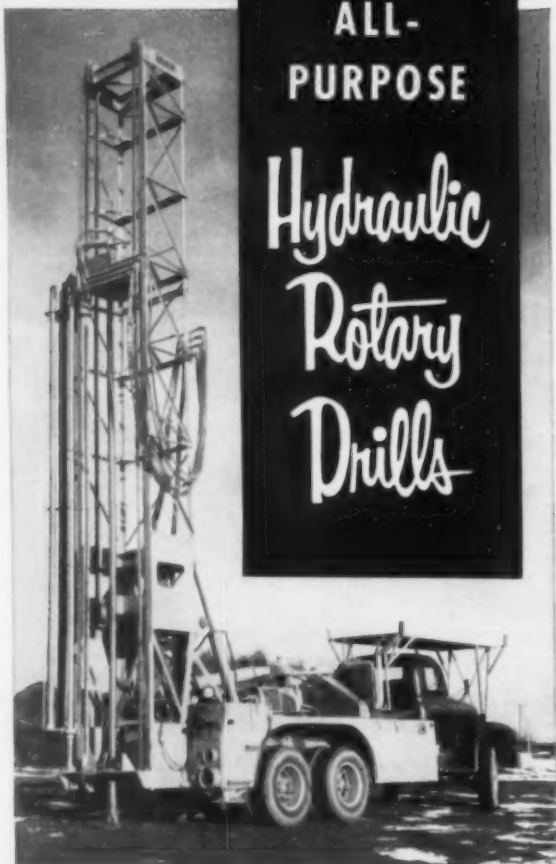
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eral value. Lime, cement, stone, and clays were the most important.

Oklahoma's production of zinc increased 30 percent and lead 40 percent in 1954 over that of 1953. This amounted to 42,650 tons of zinc valued at \$9,468,300 and 12,600 tons of lead valued at \$3,427,200. Three zinc retort smelters operated in Oklahoma during 1954.

The estimated value of nonmetallic minerals produced in Oklahoma during 1954 was \$26,000,000. In order of importance they were: clays, sand and gravel, and stone.

#### Missouri Production of Lead, and Zinc, Copper, and Silver from 1941 Through 1954

Year	Lead Tons	Zinc Tons	Copper Tons	Silver Fine Ounces
1941	165,909	21,952	1,400	169,027
1942	199,548	36,394	1,300	69,106
1943	184,910	30,413	1,340	111,285
1944	174,683	36,626	3,302	92,243
1945	176,575	22,175	3,399	94,822
1946	139,112	22,234	1,857	69,401
1947	132,246	17,074	1,760	93,600
1948	102,288	6,463	2,370	114,187
1949	127,522	5,911	3,670	123,413
1950	134,626	8,189	2,282	236,273
1951	123,702	11,476	2,422	184,424
1952	129,245	13,986	2,656	517,432
1953	125,895	9,981	2,374	359,781
1954 <sup>1</sup>	123,040	5,800	1,850	283,600

<sup>1</sup> Estimated by U. S. Bureau of Mines.

In Kansas zinc output dropped five percent in 1954, while lead remained about the same. The Eagle-Picher Company was the largest zinc and lead producer, followed by the National Lead Company. Eagle-Picher began operation of its large Central mill in early 1954 after a strike which caused a shut-down in late 1953. Also, National Lead started its Ballard operations which were closed down late in 1953 because of low metal prices.

Nonmetallic mineral output in Kansas showed an increase in value during 1954. The state's most important nonmetallics are cement, clay, salt, sand and gravel, and stone.

Zinc production from Illinois mines dropped 5 percent, lead 23 percent, and

#### Oklahoma Production of Lead, and Zinc from 1941 Through 1954

Year	Lead Tons	Zinc Tons
1941	25,021	166,602
1942	22,806	146,510
1943	19,733	114,085
1944	13,944	91,449
1945	12,664	69,300
1946	13,697	69,552
1947	14,289	51,062
1948	16,918	43,821
1949	19,858	44,033
1950	20,724	46,739
1951	16,575	53,450
1952	15,137	54,916
1953	9,304	33,413
1954 <sup>1</sup>	12,600	42,650

<sup>1</sup> Estimated by U. S. Bureau of Mines.

silver 65 percent in 1954. The decrease was concentrated in the fluorspar area located in the southern part of the state, since these metals are largely obtained as a byproduct of fluorspar operations.

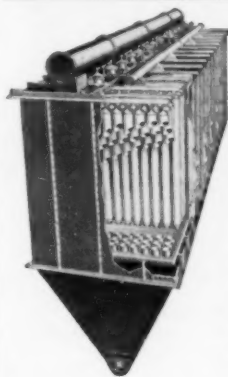
As a result of the decline in the fluorspar market, the Ozark-Mahoning Company closed all of its Illinois mines in May and discontinued work on the Oxford No. 11 shaft. Also the Minerva Oil Company reduced the work week at the Minerva No. 1 and Crystal mine to three days in March. Later in the year this was changed to five days every other week.

In the northern part of Illinois, Tri-State, Zinc, Inc. became the leading lead producer and continued to be the ranking zinc producer in Illinois. The Company

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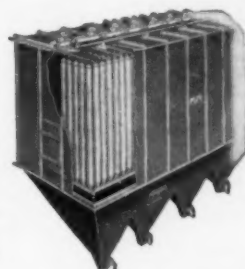
**PRODUCTS:** Automatic and Semi-Automatic Bag Type, H. E. L. S. Cyclone or Centrifugal Type, Hydraulic Type Dust and Fume Collectors, Cement Air Cooling System, Self-Contained or Portable Bag and Filter Type Units, Exhaust Fans . . . All designed and fabricated by our own shops.

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For intermittent service, as fan and unit must be shut down for cleaning, usually at noon hour and end of working day. Electrical or compressed air shaking and cleaning mechanism. Basic unit has 40 bags 6" diameter, 8' 3" long, 480 square



### Norblo Hydraulic

A high efficiency, wet type collector, for separation of dust mixed with smoke or fumes. In most installations the Hydraulic unit is used with a Norblo Cyclone collector, thus reducing the amount of wet sludge to be handled. There are no moving parts. Filter beds are coke or high-fired ceramic tubes, light in weight and kept in motion by ascending air stream so that beds are self-cleaning. Built in 11 standard sizes with capacities up to 26,000 cfm.

### Norblo H.E.L.S. Centrifugal

A cyclone or centrifugal type collector for all materials, from saw-dust to fly ash; characterized by high efficiency of collection with low static drop. The Norblo H. E. L. S. has no internal vanes, gadgets or dampers. High efficiency is obtained by scientific proportioning and by the patented (No. 2,259,919) expanding nozzle. These design features eliminate the power-wasting back eddy. Built in standard sizes with capacity up to 37,500 cfm.



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Self-contained units for efficient, de-centralized dust collection. Convenient, space-saving; can be located close to the dust source. Made in six sizes in bag type; three sizes in filter type, with capacities from 300 to 1350 cfm. All models have 8" static at fan. Fans exceptionally quiet.



### Norblo Exhaust Fans

These high speed, low power fans have been developed especially for dust collecting systems and by proper wheel selection are adaptable to all types of materials handling. All wheels are statically and dynamically balanced. Heavy duty bearings are standard equipment.



**Short Tons of Ore Mined and Short Tons of Waste Stripped at Representative  
Open Pit Mines in the United States in 1953, and 1954**

Mine	Company	1953		1954	
		Ore Mined	Waste Stripped	Ore Mined	Waste Stripped
Utah Copper Division	Kennecott Copper Corporation	29,922,200	43,500,106	24,079,400	35,856,651
Morenci	Phelps Dodge Corporation	16,180,061	30,170,808	15,427,147	31,738,176
New Cornelia	Phelps Dodge Corporation	9,537,083	14,568,468	9,128,833	13,730,441
Trail Ridge	Humphreys Gold Corporation	7,110,000	0	7,190,000	0
Chino Mines Division	Kennecott Copper Corporation	7,694,082	6,077,203 <sup>1</sup>	6,536,058	5,983,276 <sup>1</sup>
New York Ore Division	Jones & Laughlin Steel Corporation	3,957,611	1,630,920 <sup>2</sup>	3,922,660	2,399,036 <sup>2</sup>
			1,215,217 <sup>2</sup>		607,713 <sup>2</sup>
Yerington	Anaconda Copper Mining Company	331,550	12,902,025	3,866,775	6,597,085
Ray Mines Division (Pearl Handle)	Kennecott Copper Corporation	4,728,249	10,743,635	3,657,673	9,107,350
Jacksonville	Humphreys Gold Corporation	3,619,230	0	3,542,888	0
Nevada Mines Division	Kennecott Copper Corporation	4,768,267	6,826,705	3,277,385	9,209,354
Inspiration	Inspiration Consolidated Copper Co.	3,008,432	9,810,350	3,012,615	10,446,811
Nevada pits	Consolidated Coppermines Corp.	2,711,341	6,348,256	2,763,730	8,487,960
Nevada and Ohio	Basic Refractories, Inc.	2,581,000	404,000 <sup>1</sup>	1,752,000	337,000 <sup>1</sup>
Lavender	Phelps Dodge Corporation	0	—	1,651,311	13,676,967
Eagle Mountain	Kaiser Steel Corporation	1,759,437	1,740,084	1,377,384	2,574,888
MacIntyre Development	National Lead Company	1,347,293 <sup>3</sup>	2,021,460 <sup>3</sup>	1,555,952 <sup>3</sup>	1,817,133 <sup>3</sup>
Bagdad	Bagdad Copper Corporation	1,232,591	4,891,426	1,300,454	6,645,052
Copper Cities	Copper Cities Mining Company	0	4,929,633	996,160	7,257,380
Gay	J. R. Simplot Company	749,125	538,295 <sup>1</sup>	610,604	750,000 <sup>1</sup>
Florida Phosphate Division	Davison Chemical Company				
Bonny Lake		429,000 <sup>7</sup>	—	459,043 <sup>7</sup>	—
Fauway No. 4		418,000 <sup>7</sup>	—	446,000 <sup>7</sup>	—
Mountain Lion	Colorado Fuel & Iron Corporation	0	—	384,510	—
Three Kids	Manganese, Inc.	162,310 <sup>4</sup>	0	357,942 <sup>4</sup>	78,635
Van Stone	American Smelting and Refining Company	316,675	765,062	355,626	528,502
Whale	Ozark-Mahoning Company	—	—	252,127	—
Blowout	Colorado Fuel & Iron Corporation	1,010,746	—	239,930	—
Leviathan	Anaconda Copper Mining Company	183,037	9,099,042	239,857	8,697,224
Ivanhoe	Minerals Engineering Company	10,000	1,000 <sup>1</sup>	122,000	80,000 <sup>1</sup>
Nickel Mountain	Hanna Coal & Ore Corporation	0	—	120,000	—
Elizabeth OC #2	Appalachian Sulphides, Inc.	75,585	33,334	87,798	59,852
Black Rock	Wah Chang Mining Corporation	41,379	—	36,429	—
	Surcuse Mining Company	36,721	125,815	33,640	137,374
Barite	J. R. Simplot Company	19,971	20,000	17,618	20,000
Crystal	Minerva Oil Co., Fluorspar Division	0	0	11,200	10,000
Ladd <sup>5</sup>	Teekay Mines, Inc.	23,687	500 <sup>1</sup>	6,740	27,000 <sup>1</sup>
Lincoln	Wah Chang Mining Corporation	28,813	—	4,792	—
Duncan	Colorado Fuel & Iron Corporation	91,407	—	4,513	—

1. Cubic yards. 2. Gross tons rock. 3. Cubic yards overburden. 4. Dry weight.  
5. Estimated. 6. Open pit and underground. 7. Tons of product produced. 8. Long tons.

operated its Bausch mine and 1,000-ton gravity-flotation mill throughout the year.

As a result of the poor domestic fluor-spar market, zinc output from Kentucky mines decreased 14 percent in 1954. This was due mostly to ceasing of operations at the Tabb No. 1 mine of the United States Steel Company. Ozark-Mahoning also shut down its Commodore mine in October. Both of these mines yielded lead and zinc as a byproduct of fluor-spar.

## Colorado

### Uranium Boom Continues; Climax Ups Production

The uranium boom continued to dominate the mining industry in Colorado in 1954. The end of the year saw little slackening in the "uranium fever" which has engulfed the people of Colorado as well as the people of the nation. New discoveries of uranium were reported throughout the state. Secondary-type ores were discovered in such areas as the Animas Valley north of Durango in La Plata County; the Upper Piedra River district near Pagosa Springs in Archuleta County; near Canyon City in Fremont County; and in Moffat, Rio Blanco, Routt, Eagle, Fremont, and Gunnison counties. New discoveries of primary-type ores were reported in Gunnison, La Plata, Ouray, Gilpin, and Clear Creek counties. Perhaps the most important of the new areas was the Los Ochos discovery in the Cochetopa area of Gun-

nison County where a substantial amount of ore has reportedly been developed. Much exploration and development were carried out during the year in the Central City-Blackhawk area of Gilpin County.

However, the new areas have not changed the production picture any from the preceding years. Mesa, Montrose, and San Miguel counties are still some of the major domestic sources of uranium ores. Mine production has continued to exceed mill capacity of the immediate area in spite of the fact that most of the existing mills (Monticello, Utah; Durango, Naturita, Uravan, Grand Junction, and Rifle, Colorado) either have or are in the process of again increasing their capacities. Even though the U. S. Atomic Energy Commission, more than a year ago, recognized the need for and made assurances that additional milling facilities would be made available in the Uravan Mineral Belt, nothing has mate-

rialized to this time. It could become a serious problem in some sections of the Colorado Plateau if recent announcements of temporary curtailments in ore purchase should become more widespread.

A recognizable trend was noted during 1954 in the absorption and merger of small operators and companies: for example, Consolidated Uranium Mines, Inc. took over five Colorado companies, while Camoose Mines, Ltd. of Canada purchased the Montrose County uranium holdings of the J. R. Simplot Company.

Other mining areas throughout the state showed an encouraging upswing. Daily production of Climax Molybdenum Company surpassed 27,000 tons following recent expansion of mining and milling facilities at the request of the Federal Government. The \$34,000,000 expansion program reached completion in January 1954. An all-time daily pro-

### Colorado Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	380,029	7,301,697	6,748	12,574	15,722	\$23,877,597
1942	268,627	3,096,211	1,102	15,181	32,215	19,896,623
1943	137,558	2,664,142	1,028	18,032	44,094	19,205,415
1944	111,455	2,248,830	1,048	17,698	39,995	17,724,473
1945	102,935	2,226,780	1,485	17,044	35,773	16,676,521
1946	142,613	2,240,151	1,754	17,036	36,147	19,903,509
1947	168,279	2,557,653	2,130	18,696	38,745	23,868,179
1948	154,802	5,011,011	2,298	25,143	45,164	30,155,337
1949	102,618	2,894,886	2,403	26,853	47,703	27,474,522
1950	130,390	3,492,278	3,141	27,007	45,776	29,323,268
1951	116,501	2,787,882	3,212	30,336	55,714	38,931,539
1952	124,594	2,813,643	3,066	30,066	51,203	35,997,251
1953	119,218	2,300,000	2,941	21,754	37,809	22,247,780
1954 <sup>1</sup>	95,000	3,400,000	4,400	17,700	34,750	21,544,672

<sup>1</sup> Estimated by U. S. Bureau of Mines.



duction record of 32,565 tons was set in September. Climax has 1,400 employees.

In 1954, the Empire Zinc Division of the New Jersey Zinc Company continued to operate the Eagle mine at Gilman as the principal producer of zinc in Colorado. Operations were on a 5-day-week basis with an average of 450 employees.

Telluride Mines, Inc. at Telluride is planning to enlarge its 900-ton mill to 1,400 tons. The mill shut down in April 1954, because of low base-metal prices. The Rico Argentine Mining Company at Rico, Colorado started work on a new \$1,500,000 sulfuric acid plant. Daily production will be 100 to 200 tons of sulfuric acid.

Resurrection Mining Company continued to operate its mill in California Gulch, Lake County. Fifty men were on the company payroll, and 49 men were employed in the various Resurrection leases. The company's 700-ton mill operated one 350-ton unit on a one-to-three shift basis, averaging 160 tons per day and processing a total of 51,000 tons during 1954. This compared with 105 tons per day during the period July 1 to December 31, 1953.

A stimulus to Colorado's tungsten industry has been forecast by the purchase of the former Boulder Tungsten Mines, Inc., mill west of Boulder, Colorado by the Wah Chang Trading Corporation.

## Eastern

### Footo Mineral Increases Production of Lithium

Zinc production in New Jersey continued to decline in 1954, dropping 20 percent below that of 1953. As in previous years, the two mines of The New Jersey Zinc Company—the Franklin and Sterling in Sussex County—were the producers. In October the Franklin mine was closed down due to depletion of the ore body. The mine had been in operation since 1849 yielding zinc ore almost continuously since that time.

An extensive development and modernization at the Sterling mine was almost completed by the end of 1954. A new, five-compartment, 2,700-foot-deep shaft was completed and new crushing equipment installed underground. Four 2,000-cubic-foot-per-minute air compressors were installed and new mine cars and locomotives were placed in operation.

Zinc production from mines in New York during 1954 reached the highest level in the history of the State, and was three percent greater than the previous record year of 1953. Output of lead dropped 19 percent, and silver 26 percent as compared to 1953. The St. Joseph Lead Company operated its Balmat and Edwards mines continuously throughout the year. In 1954 mine production of recoverable zinc totaled 53,318 tons, lead 1,168 tons, and silver 26,066 fine ounces.

At Henderson, North Carolina, the Tungsten Mining Corporation had almost completed construction of a new chemical plant near its Hamme mine. The plant will process dust recovered from tungsten milling operations into a saleable product. It is scheduled to go into operation early in 1955. Tungsten Mining Corporation again continued to be the nation's No. 1 producer of tungsten in 1954.

By the end of 1954 the Footo Mineral Company had completed expansion of its spodumene plant facilities at Kings

### Short Tons of Ore Mined at Representative Underground Mines in the United States in 1953, and 1954

Mine	Company	1953	1954
Climax	Climax Molybdenum Company	6,604,857	8,709,900
Southeast Missouri Division	St. Joseph Lead Company	5,377,405	5,738,700
Butte Mines	Anaconda Copper Mining Company		
Copper ore		4,240,567	3,788,673
Zinc ore		1,323,607	915,135
Manganese		471,642	370,288
Potash Division	International Minerals & Chemical Corp.	2,759,039	3,531,963
Miami	Miami Copper Company	3,705,113	3,415,914
Calumet Division	Calumet & Hecla, Inc.	2,009,262	1,981,694
Cornwall	Bethlehem Cornwall Corporation	1,699,412	1,498,101
Homestake	Homestake Mining Company	1,368,059	1,485,226
Copper Hill Mines	Tennessee Copper Company	1,138,554	1,188,576
Potash Division	Duval Sulphur & Potash Company	1,002,132	1,014,744
Old Bed	Republic Steel Corporation	1,086,849	998,544
Ray Mines Division	Kennecott Copper Corporation		
No. 2		861,330	786,190
White Pine	White Pine Copper Company	216,903 <sup>1</sup>	698,600 <sup>1</sup>
Copper Queen	Phelps Dodge Corporation	576,658	600,310
Westvaco	Intermountain Chemical Company	281,130	409,461
East Side	Pend Oreille Mines and Metals Co.	500,040	482,005
Magma	Magma Copper Company	431,749	463,915
Chelan Division	Howe Sound Company	436,670	445,832
Sunrise	Colorado Fuel & Iron Corporation	603,730	439,557
Bunker Hill	Bunker Hill & Sullivan Mining & Concentrating Company	407,112	411,900
Inspiration	Inspiration Consolidated Copper Co.	909,483	369,536
Hamme	Tungsten Mining Corporation	209,760	289,411
Bausch-Luning	Tri-State Zinc, Inc.	279,759	287,842
Mouat	American Chrome Company	83,895	284,094
Harmony	Republic Steel Corporation	362,846	277,734
Treasury Tunnel—Black Bear	Idarado Mining Company	260,200	267,250
Sunshine	Sunshine Mining Company	249,686	200,698
Elizabeth	Appalachian Sulphides, Inc.	214,825	225,042
Polaris Mines	Polaris Mining Company	113,620	121,046
Anderson	Montana Phosphate Products Company	185,958	189,231
Iron King Branch	Shattuck Denn Mining Corporation	190,405	180,240
Lincoln	Wah Chang Mining Corporation	43,459	168,228
Blackbird	Calera Mining Company	68,574	163,048
Iron Mountain	Ozark Ore Company	224,400 <sup>2</sup>	144,600 <sup>2</sup>
Day Mines	Day Mines, Inc.	142,331	137,389
Page	American Smelting and Refining Company	153,718	132,656
Star	Sullivan Mining Company	2,8304	216,877
Bald Mountain	Bald Mountain Mining Company	107,450	114,459
Grandview	American Zinc, Lead & Smelting Company	234,250	113,502
Graham	The Eagle-Picher Company	66,040	112,482
Chief No. 1	Chief Consolidated Mining Co.	113,632	107,912
Fisher Hill	Republic Steel Corporation	557,171	99,370
Graveley	Montana Phosphate Products Company	81,676	94,910
Shullsburg	The Eagle-Picher Company		93,511
Black Rock	Wah Chang Mining Corporation	19,422	93,544
Brunswick	Idaho Maryland Mines Corporation	153,364	88,632
Mayflower	New Park Mining Company	81,192	86,495
Birkett	The Eagle-Picher Company	46,491	69,268
Frisco	American Smelting and Refining Company	71,183	65,437
Knob Hill	Knob Hill Mines, Inc.	59,160	56,342
Front-Mining Division	American Gilsonite Company	57,669	54,783
Dale	American Machine & Metals, Inc.	48,580	51,594
Morning	Dale Mining Company	115,814	51,459
Minerva No. 1	American Smelting and Refining Company	96,010	49,468
New Idria	Minerva Oil Co., Fluorspar Division	62,841	48,772
200' Level	New Idria Mining & Chemical Co.	35,486	43,090
Sidney	Ozark-Mahoning Company		39,298
Clayton	Sidney Mining Company	60,413	32,040
	Clayton Silver Mines	34,904	30,448
	Empire Star Mines Co., Ltd.	23,520	28,195
Pima	Pima Mining Company	13,710	26,483
Ajax	The Golden Cycle Corporation	26,616	26,466
Luke	Montana Phosphate Products Company	0	26,250
Cresson	Cresson Consolidated Gold Mining and Milling Company	18,249	25,480
Constitution	Spokane-Idaho Mining Company	33,293	21,565
United Mines	United Park City Mines Company	12,251	19,326
Carbonero	Silver Bell Mines Company	12,251	16,901
Crystal UG	Minerva Oil Co., Fluorspar Division	66,904	14,259
Silver Bell	Silver Bell Mines Company	12,038	
	Surace Mining Company	3,592	4,664
Diamond	Consolidated Eureka Mining Co.	0	1,195

1. Development only. 2. Concentrate.

Mountain, North Carolina. This resulted in increased output of spodumene concentrates which were shipped to the company's plant at Sunbright, Virginia for extraction of lithium values.

Nipissing Mines Company has drilled out an ore body in Ashe County, North Carolina which contains some 1,219,700 tons of ore averaging 3.09 percent copper with minor amounts of zinc, cobalt, gold, and silver. An \$8,000,000 shaft sinking and development program has been planned. The shaft will have three compartments and be carried to a depth of 1,150 feet.

The most important mining development in Virginia during 1954 was the expansion of Footo's spodumene treatment facilities at Sunbright. Work on the plant expansion, which would increase lithium

production, was expected to be completed early in 1955.

Zinc production in Virginia in 1954 dropped two percent below that of 1953, while lead increased. The Austinville mine and 2,400-ton mill of The New Jersey Zinc Company operated continuously during the year. Zinc concentrates produced were sent to company smelters at Palmerton, Pennsylvania, and Depue, Illinois; lead concentrates were shipped to a smelter at Alton, Illinois.

New Jersey Zinc continued development of its Ivanhoe mine located 2½ miles southwest of Austinville, Virginia. Progress was reported on the 13,300-foot transportation tunnel which will connect the Ivanhoe and Austinville underground workings. First production for the Ivanhoe is scheduled for 1955.

**Production of Gold, Silver, Copper, Lead, and Zinc in New Jersey,  
New York, Pennsylvania, Vermont, and Virginia in 1953, and 1954\***

Metal	New Jersey		New York		Pennsylvania		Vermont		Virginia		Totals	
	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954	1953	1954
Gold <sup>1</sup>					1,134	1,335	171	175			1,305	1,510
Silver <sup>1</sup>			35,398	26,066	6,972	8,325	43,128	45,782			85,498	80,173
Copper <sup>2</sup>					3,027	3,279	3,947	4,181			6,974	7,460
Lead <sup>2</sup>									2,016	3,495	3,451	4,663
Zinc <sup>2</sup>	45,700	36,567							16,676	16,340	113,905	106,225

\* Estimated. <sup>1</sup> Fine ounces. <sup>2</sup> Short tons.

Companies, other than New Jersey Zinc, doing exploration work during the year on zinc-lead deposits in Virginia were Tri-State Zinc, Inc. which core drilled its Timberville property, and Belville Gold Mines, Ltd. of Ontario which examined several properties near New Canton and Dillwyn.

In Pennsylvania the Bethlehem Cornwall Corporation (subsidiary of Bethlehem Steel Company) continued sinking its two shafts near Morgantown. One shaft was 1,200 feet deep and the other 1,600 feet deep at year's end. They will be bottomed at 3,000 feet. First production of iron ore from this \$34,000,000

operation is planned for late 1957. Full-scale production, 12,000 tons of iron ore per day, is scheduled for some time in 1960.

No lead or zinc production was reported for Pennsylvania in 1954. However, New Jersey Zinc continued development of its zinc property near Friedensville. As in previous years, gold, silver, and copper were produced as byproducts from Bethlehem Steel's Cornwall iron ore mine in Lebanon County.

The Vermont Copper Company, which has changed its name to Appalachian Sulphides, Inc., operated its Elizabeth mine and 800-ton mill near South Strafford, Vermont during all of the year. Mill products include copper concentrates shipped to Phelps Dodge Corporation's smelter at Laurel Hill, New York, and pyrrhotite concentrates shipped to a New England paper manufacturer for conversion to sulfuric acid.



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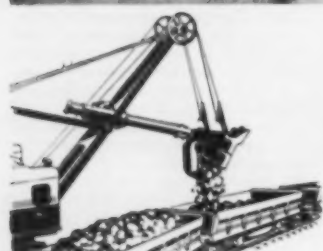
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## Idaho

### Production of Phosphate Up and Base Metals Down

Phosphate mining and monazite dredging continued to expand in Idaho in 1954, whereas the state's base metal industry continued to contract. Idaho continued to rank first and second among silver and zinc producing states.

Estimated phosphate rock output exceeded the 1,000,000-ton record of 1953. By comparison, 1954 production of zinc-lead-silver-copper-gold ores totaled 1,910,000 tons.

Monsanto Chemical Company doubled capacity of its elemental phosphorus plant at Soda Springs, Caribou County. Westvaco Minerals Products Division, Food Machinery and Chemical Corporation, spent more than \$1,000,000 improving its Pocatello elemental phosphorus plant and increased personnel five percent.

J. R. Simplot Co. completed a two-year conversion program at its Pocatello phosphate fertilizer plant which upped production from 60,000 tons to well over 100,000 tons annually. The firm's Gay open-pit mine in Bingham County again was the state's leading producer of phosphate rock.

Anaconda Copper Mining Company improved its beneficiating plant at Conda. San Francisco Chemical Company operated the Waterloo open-pit phosphate mine in Bonneville County, and conducted exploration and development at the underground Cumberland mine.

Jefferson Lake Sulphur Company, New Orleans, Louisiana, announced plans to construct a multi-million dollar phosphate fertilizer plant in Bear Lake County, Idaho. This would bring to \$100,000,000 the total invested in Idaho's phosphate industry in the last 10 years.

Dredging of heavy sands near Cascade, Valley County, was continued by Baumhoff-Marshall, Inc. and Idaho-Canadian Dredging Corporation. Monazite concentrates derived from their treatment at the B-M separation plant in Boise were shipped to the government stockpile and to private industry. Ilmenite and zircon were stockpiled at the plant. Porter Bros. Corporation constructed a dredge at Bear Valley, in southeastern Valley County, in preparation for large-scale operations. Jesse H. Knight & Associates, a Canadian firm, and several other companies were engaged in exploration and development of similar placer deposits.

**Idaho Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954**

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	149,816	16,672,410	3,621	104,914	79,084	\$41,776,848
1942	95,020	14,644,890	3,430	113,909	87,256	46,063,326
1943	30,808	11,700,180	2,324	96,457	86,707	43,199,910
1944	25,008	9,931,614	1,688	83,530	91,372	42,591,137
1945	17,780	8,142,667	1,348	68,447	83,463	37,799,975
1946	42,975	6,491,104	1,038	59,987	71,507	37,610,123
1947	64,982	10,345,779	1,640	78,944	83,069	55,164,670
1948	58,454	11,448,875	1,624	88,544	86,267	67,758,290
1949	77,829	10,049,257	1,438	79,299	76,555	56,429,796
1950	79,652	16,095,019	2,107	100,025	87,890	70,198,647
1951	45,064	14,753,023	2,160	76,713	78,121	70,953,653
1952	32,997	14,923,165	3,213	73,719	74,317	64,626,967
1953	2,376	13,636,680	2,100	69,885	68,650	47,729,814
1954 <sup>1</sup>	1,700	14,812,730	2,530	63,320	57,330	44,918,889

<sup>1</sup> Estimated by U. S. Bureau of Mines.

Value of the zinc, lead, silver, copper, and gold produced in Idaho in 1954 was the lowest since 1946. It was the third consecutive decline in as many years. Value declined 4 percent from 1953 to \$49,522,402.

Gold output was lowest in at least 30 years. Zinc production fell 16 percent and lead production declined 9 percent. Copper mine production gained 45 percent as a result of increased output of copper-cobalt ore by Calera Mining Company at its Blackbird mine, Lemhi County. Calera's output of cobalt concentrates was up substantially. A substantial gain in silver output was due to increased production by Sunshine Mining Company and American Smelting and Refining Company's Galena mine in Shoshone County.

About 1,500,000 pounds of antimony were produced by Sunshine Mining Company as a byproduct and stockpiled.

Initial tungsten concentrates were produced by Salmon River Scheelite Corporation, Custer County, and by Cordero Mining Company near Sun Valley, Blaine

County. A placer deposit of garnet was mined in Benewah County. Mica and beryl were produced near Deary, Latah County. The Hermes mine near Stibnite, Valley County, continued as the state's lone mercury producer. Fluorspar deposits were investigated in Lemhi and Custer Counties.

Uranium exploration in Idaho was concentrated in the Hailey area, Blaine County, where a showing of autunite and uraninite was reported. An occurrence of pitchblende was reported in the Murray district, Shoshone County, by North Fork Mining Company. More than a score of Coeur d'Alene district firms acquired uranium prospects in the Colorado plateau states.

Bunker Hill & Sullivan Mining and Concentrating Company, Kellogg, set a new district sinking record of 2,000 feet in about 11 months in completing its Crescent mine shaft-deepening project at 3,275 feet.

Sullivan Mining Company began production at its sulphuric acid plant constructed at its electrolytic zinc smelter near Kellogg.

## Lake Superior District

### Iron Ore Output Down; Interest on Taconite

1954 was a year of contrasts on the Iron Range. Production and ore shipped fell off badly as steel mill demand slackened. On the other hand, capital expenditures for new ore producing facilities climbed to an all-time high.

The results of the pilot plant work in taconite began to show fruit as the construction of two full-scale plants got well underway. The E. W. Davis Works of Reserve Mining Company will be the first in production, possibly the latter part of 1955. The larger, Erie Mining Company's mill won't be ready for operation for at least two more years.

During the season, production was off to the point where many of the mines were on a four-day-week basis, whereas the previous year they had been working six days a week. The shipping season opened later and closed earlier for many of the mines than it has in several years.

It is somewhat surprising that in spite of this cutback in the work week 60,793,697 gross tons were shipped from the Lake Superior district during the season. Compared with 1953's 95,844,449 gross tons, this is quite a reduction. A very few years ago, however, 60,000,000 tons would have been an impossible goal.

During the latter part of 1954, as steel mill production picked up, it became obvious that an improved season could be expected in 1955. As a consequence,

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# IRON ORE SHIPMENTS IN GROSS TONS FROM MINNESOTA, MICHIGAN, AND WISCONSIN BY COMPANIES AND MINES FOR 1952, 1953, AND 1954

Company Mine	1952	1953	1954	Company Mine	1952	1953	1954	Company Mine	1952	1953	1954
<b>E. C. Bradley &amp; Sons</b>				<b>Jennison</b>	335,153	8,411		<b>Spruce U. G.</b>	175,668	61,153	
Bradley	49,559	24,017	16,824	Harrison Annex	16,068			Spruce O.P.	1,508,376	2,668,482	984,914
<b>Charleson Iron Mining Co.</b>				Galbraith Annex	116,318			Fayal O.P.	664,535	656,532	175,413
1952 (246,496), 1953 (192,660), 1954 (128,113)				Alstead	28,164	100,164		Canton	1,596,048	2,650,487	1,281,040
<b>Charleson Concentrator</b>	177,334	192,660	128,113	Maroco	45,152	26,409		Canton (St. James)	651,876	647,783	498,008
Glen Stockpile	69,162			Mangan Joan	9,823	829		Pilot			
<b>Cleveland-Cliffs Iron Co., The</b>				Mangan Stai	16,671			(Taconite conc.)		104,464	360,363
1952 (7,510,215), 1953 (8,321,927), 1954 (5,131,514)				Louise	36,526	51,366		Gilbert	1,403,417	2,065,524	740,564
Athens	465,922	447,576	166,448	Rowe	2,960	1,468		Saunty	374,975	646,911	150,036
Bunker Hill	45,621	126,191	34,558	Mallen	52,316	28,882		Hull-Rust Group	3,084,116	3,950,841	2,152,379
Cambria-Jackson	345,513	349,622	146,951	Bengal-Tully	116,122	270,816		Sherman Group	7,510,531	9,276,467	5,977,917
Cliffs Shaft	531,457	517,715	428,218	Michigan concentrates	8,097			Monroe			1,123,435
Humboldt				<b>Haley-Young Mining Company, E. A. Young, Inc., and Range Mining &amp; Contracting Co.</b>				Pillsbury	14,796	31,069	221,453
Lloyd	71,120	114,646	137,772	1952 (210,074), 1953 (300,175), 1954 (144,892)				Kosmerl		616,627	434,756
Maas	486,174	562,100	166,388	Minnevas	72,155	88,058	52,862	Pillsbury Brown	177,543	33,494	100,856
Mather	1,446,938	2,248,146	1,535,800	Mississippi No. 1	1,074	2,057		Fraser U. G.	200,105	305,945	244,098
Ohio				Elbern	136,845	150,514	46,405	Gedfrey U. G.	552,005	646,207	507,230
Tilden	80,449	103,393	77,781	Ernie Mine		3,546		King Plummer	5,180	1,897,352	1,538,461
Spies	126,727	177,406	101,368	Atkins		76,000	18,009	Gross Marble		1,334,431	792,143
Agnew-Alworth	350,252	221,054	235,519	<b>Inland Steel Company</b>				Mott S.P. No. 54	27,052		
Canisteo	825,737	796,181	516,155	1952 (1,510,641), 1953 (1,467,401), 1954 (1,547,001)				Auburn Group	1,300,507		
Hawkins	709,711	528,374	288,819	Armour No. 1	148,192	136,071	151,815	Burns	28,158		
Hill-Trumbull	668,210	765,863	304,783	Armour No. 2				Morris Group	165,911	176,006	
Holman-Cliffs	766,025	921,590	679,345	(Shaft)	333,558	243,044	131,079	Monroe Group	2,515,604	3,046,652	
Sargent	239,561	185,448	74,998	Armour No. 2 (Pit stockpile)				Midway Group	170,276	189,206	
Wanless	237,907	132,007		Morris	294,569	324,150	108,477	Niles	33,388	225,315	
Webster	59,507			Greenwood	100,956	91,530	85,942	Dormer	355,181	914,419	
Atkins	53,383			Sherwood	433,603	413,144	430,679	Sharon	1,728		
<b>E. W. Coome Co.</b>				Bristol	199,763	259,662	268,516	Iron Chief	293		
1952 (435,385), 1953 (502,642), 1954 (205,332)				Cayia (Stockpile)			44,492	Sellers	76,953		
Genos-Sparta	220,684	158,037	119,920	<b>Jessie H. Mining Company</b>				d'Autremont	3,952		
Sidney	105,134	124,951	62,831	1952 (125,850), 1953 (167,256), 1954 (125,850)				Glen Stockpile	69,162		
Lincoln "D"		149,350	16,539	<b>Jones &amp; Laughlin Steel Corporation</b>				Walker Group	1,021,826		
Victoria		15,059	4,032	1952 (2,771,233), 1953 (2,884,842), 1954 (1,757,680)				Arctus Group	539,345	174,593	
South Julia	8,118	109,763	1,901	Hill Annex	638,067	583,590	532,075	Mariska Extension		230,947	
South Commodore		1,126		Longyear	720,247	838,726	474,556	<b>Pioneer Mining Company</b>			
<b>M. A. Hanna Company</b>				Columbus	424,893	392,412	436,153	Mary Ellen (Conc.)	364,489	502,016	461,535
1952 (11,668,627), 1953 (15,675,072), 1954 (10,360,610)				Missabe Mountain	24,305	71,470	309,778	<b>Pacific Isle Mining Company**</b>			
Cannon				Wentworth	182,670	354,747		1952 (540,857), 1953 (551,677), 1954 (531,124)			
Hiawatha	556,592	630,423	530,229	Schley	230,124	394,129		The Drew			
Homer	455,652	655,257	433,612	South Longyear	349,409			Croton-Syme	41,212	128,213	
Wausea	505,891	488,487	481,886	Saunty	200,970			Dunwooly L.O.S.P.	48,120	64,818	45,215*
Richmond	117,231	147,388	83,378	Graham	598	40,766		Emmett	69,855	68,034	
Wakefield	128,323	155,615	152,287	<b>Globe Iron Company</b>				Graham No. 2	2,388	1,636	47,076
Bray	772,824	506,943	109,802	Cornell	44,596	19,705	36,420	Uno-Kerr Area	91,083	58,102	21,415
Gordon	90,999	430,803	100,901	<b>W. S. Moore Company</b>				Lamberton	3,083	6,959	26,387
Mesaba Chief	495,129	326,516	182,738	1952 (672,312), 1953 (731,962), 1954 (508,915)				Missabe Mountain L.O.S.P.			9,349
Stein	80,668	254,195	340,002	Margaret	71,280	71,046	10,168	So. Lease			3,186
Enterprise	270,483	1,026,270	809,474	Missouri Stockpile	15,117	15,142		North Shiras	89,440	41,253	9,742*
Brunt		13,286	16,544	Hanna	50,291	60,850	35,615	Shiras	5,366	19,481	
Impro "B"	34,448	243,626	44,829	Judson	153,842	167,773	169,858	Wacotah (A&B)	32,347	33,800	169,147
Norpac	53,763	80,805	52,976	Pilot-Annex	11,736	130,404	31,452	York	147,912	83,036	60,126
Pillsbury Addition		16,864	7,016	Pilot	159,598	8,165	20,476	Brunt Trespass		13,286	16,544
Buckeye	452,104	656,561	467,599	Prindle	189,269	132,263	42,668	Cyprus-Rust		24,786	
Section 18	775,389	1,023,185	478,022	Prindle Stockpile		14,386	3,536	Minorca W. Lease		2,582	
Shiras			1,251	Yawkey	21,179	14,386	109,098	Nordine		463	
Douglas	234,295	129,560	95,465	Knox		50,947		Pacific Fee		1,356	1,410
Duncan	233,446	514,666	214,622	Margaret Stockpile		7,569		Silver L.O.S.P.			5,483
Argonne	105,770	19,153	18,333	Stubler		54,887	3,691	Alpena L.O.S.P.			48,982
Leach	65,308	4,944	2,232	Norman				Bradford			32,915
Perry	448,155	441,159	271,501	<b>North Range Mining Company</b>				Chataco			34,147
Carl No. 2	76,845	742,559	363,128	1952 (738,920), 1953 (511,377), 1954 (474,275)				** Includes mines of the Hedman Mining Company, Pittsburgh Pacific Company, and Bradford Mining Company.			
Harrison	45,875	319,828	71,516	Blueberry	213,660	165,828	88,832	* Also includes production from Sec. 34 L.O.S.P.			
North Harrison	134,485	131,487	80,286	Liberty	176,786	142,858	160,746	* Also includes production from Shiras Trespass.			
Halob	194,916	206,514	90,029	Book	207,717	135,254	60,979				
Quinn	124,756	122,306	39,183	Warner	140,757	150,371	154,785				
Lot No. 1			59,185	Leonidas			8,933				
Wyman	205,658	253,306	82,046	<b>Oglebay, Norton &amp; Co.</b>							
Patrick A	421,734	326,393	254,108	1952 (1,973,263), 1953 (1,045,660), 1954 (699,385)							
Patrick Annex	18,275	27,612	5,880	Montreal	948,962	1,084,865	938,284				
Olson	281,720	514,590	338,083	St. James (St. James Mining Co.)	372,259	397,876	201,377				
Kevin A	101,632	80,113	26,409	Canton Property	651,881	647,784	498,008				
Kevin B	243,152	313,795	86,357	<b>Oliver Iron Mining Division</b>							
Patrick B	126,298	154,546	114,305	1952 (34,456,449), 1953 (44,124,717), 1954 (25,231,853)							
Patrick C		697,519	239,755	West Davis-Geneva							
Galbraith	315,226	230,881	227,171	U. G.	604,821		576,686				
Aromac		51,409	127,604	Pioneer U. G.	804,626	895,588	745,027				
Mack-Killian		411,304	167,704	Sibley U. G.	157,034	87,649	67,744				
Weggon	74,754	159,795	147,970	Soudan	191,122	188,255	166,139				
Weggon South				Mountain Iron Group	2,641,502	2,779,579	1,330,215				
Longyear	340,409	437,678	288,060	Rouchleau Group	4,667,948	6,717,617	4,755,059				
South Agnew	693,058	708,522	331,015								
Agnew No. 2	142,368	335,930	206,991								
Morton			600,245								
Hillcrest Extension			28,430								
Feigh	260,491	120,415	1,180								
Huntington		127,673	19,863								
South Hillcrest		152,334	88,708								
Cuyuna Fee			188,002								
Section 6	165,750	280,438	9,500								
Snowshoe	40,797	32,775	17,743								
Louise No. 1			57,832								
Louise No. 2			448,060								
Portsmouth	393,862	599,326	448,060								
South Yawkey	707	156,900	46,235								
North Yawkey			150,080								
Spring Valley	477,546		150,512								
Wabigan	232,139										



# IRON ORE SHIPMENTS IN GROSS TONS FROM MINNESOTA, MICHIGAN, AND WISCONSIN BY COMPANIES AND MINES FOR 1952, 1953, AND 1954

Company Mine	1952	1953	1954	Company Mine	1952	1953	1954	Company Mine	1952	1953	1954
<b>Republic Steel Corporation</b>											
1952 (1,973,263), 1953 (1,969,643), 1954 (1,606,332)				Rabbit (Taconite)	12,861	185,243	279,970	<b>Zontelli Brothers, Inc.</b>			
Union Lean Ore (Stockpile)			207,208	<b>Rhude &amp; Fryberger Company</b>				1952 (491,315), 1953 (626,869), 1954 (233,802)			
Susquehanna (Susquehanna Ore Company)	802,343	796,297	669,963	1952 (423,166), 1953 (724,027), 1954 (464,828)				Virginia	131,613	26,789	28,425
Stevens	148,676	136,906	176,842	Boeing		300,312	355,792	Mangan-Joan	99,943	225,723	66,763
Penokee	408,195	430,358	262,433	Troy	121,005	125,466	53,327	Martin	837	219	
Monongahela (Tobin)	283,957	305,669	289,886	Seville	39,174	7,792		Merritt	14,187	15,687	6,743
St. Paul	247,226	280,423		South Hillcrest	2,948			Merritt Stockpile			
<b>Reserve Mining Company</b>				Pennington	260,239	270,457	55,709	Hillcrest	3,803		
1952 (12,861), 1953 (185,243), 1954 (279,970)				<b>Snyder Mining Company</b>				Gorman	75,917	5,754	
				1952 (609,235), 1953 (764,794), 1954 (594,796)				Manuel	98,518	209,419	61,226
				Webb	388,075	470,337	501,029	Graham No. 1	598	49,766	10,645
				Whiteside	91,651	283,303	293,767	Ironwood			
				Shearago	129,509	11,154		Concentrator	65,899	53,298	40,134
								Davidson			

stripping and repair activities picked up and mine crews were expanded.

One of the somewhat surprising developments during 1954 was the strong comeback made by jigs as a machine for concentrating minus 1/4-inch ore. A good deal of the credit for this must be given Charles Remer of the Charleson Iron Mining Company. He developed a jig for his own use that has created considerable interest on the part of other producers. Four other companies are now using Remer jigs for their fines concentrating problem. A share of the reason for the marked increase in the use of jigs is probably due to a sense of disappointment by some operators in the development and operation of the DSM cyclone plants.

The cyclone plants on the Range have yet to reach the development stage that had been anticipated. Operating costs have been comparatively high, and metallurgy hasn't been what was hoped for. It is generally felt that cyclones still have a good potential future, but much more time and money must be spent before the ultimate in cyclone operation is reached.

During 1954 two new heavy media separation plants and three new cyclone plants were put into production. Construction was started on four HMS plants and three cyclone plants. Most of this work is being done by companies operated by Pickands Mather & Co. New plants are going in at its Mahanomet, Bennett, Tioga, and Danube mines. It is of interest to note, however, that Oliver Iron Mining Division started construction of its first heavy media and cyclone

plant at the Gross-Marble mine. Since Oliver is the largest producer and holder of ore reserves on the Range, it is expected that it will soon add these or similar gravity concentrating processes to some of its other properties.

During 1954 many of the companies started giving more consideration to plant feed preparation problems. Methods of scrubbing were given serious study. Several different types of scrubbers were installed and results were found to be encouraging.

## Michigan Production of Copper and Iron Ore from 1941 Through 1954

Year	Copper	Iron Ore*
1941	46,440	15,201,619
1942	45,679	16,129,474
1943	46,764	14,510,357
1944	42,421	15,425,788
1945	30,401	11,865,624
1946	21,663	8,756,802
1947	24,184	12,965,482
1948	27,777	12,806,422
1949	19,505	11,199,024
1950	25,608	12,691,101
1951	24,979	13,703,901
1952	21,699	11,779,366
1953	24,097	14,326,074
1954	23,350	10,447,000

\* Gross Tons.  
† Estimated by U. S. Bureau of Mines.

Some interest was diverted to the Cuyuna Range during the season, where, in addition to four iron ore producers, the Manganese Chemical Company had its new leaching plant in operation. There appears to be a good possibility that the present pilot plant will be ex-

panded to a full-scale unit within the next few years.

It is interesting to note that the manganese carbonate being produced at Manganese Chemical is being pelletized in a manner almost identical to that being used by the taconite producers.

Work in the underground mines of Michigan was also down to a four-day week for most of 1954. At the same time a number of major capital expenditures for new facilities were made.

At the Cliffs Shaft mine in Ishpeming, The Cleveland-Cliffs Iron Company is installing a new friction-type hoisting system. Equipment and engineering was provided by a Swedish firm. This will be the first such installation in the United States.

The Humboldt Mining Company, jointly owned by the Ford Motor Company and Cleveland-Cliffs, and operated by the latter company, produced the first concentrate from the nonmagnetic taconite ore of the Marquette Range. The Humboldt flotation mill began operation in February. Construction of Cleveland-Cliffs' Republic mill which will be larger, but otherwise similar to the Humboldt, continued with completion scheduled for late 1955. Late in the year Cleveland-Cliffs announced the construction of a 2,000-ton-per-day pelletizing plant for treating the Humboldt and Republic concentrates.

There are now two HMS plants in operation in northern Michigan; one at the Ohio mine of Cleveland-Cliffs, the other at the Book mine of the North Range Mining Company. The remainder



NEW IRON ORE MINE, the Lawrence, of the Pickands Mather & Co., located on the Menominee Range near Crystal Falls, Michigan, went into production in 1954. To the right of

the headframe is the trestle extending over the railroad siding to the stockpile area. Dumpsters will be used to stockpile the ore during the winter months.

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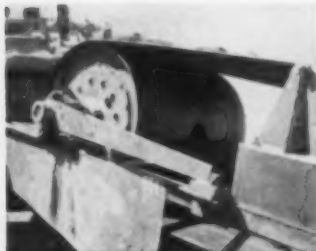


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of the Michigan iron ore production was shipped without resorting to concentration.

With continued improvements in technical methods, the Iron Ranges feel they can keep pace with foreign ore production and continue to retain a major share of an expanding market.

In Michigan's copper country, interest was focused on two major developments: the unwatering of the Osceola Lode by the Calumet Division of Calumet & Hecla, Inc., and the continued major construction and mine development by the White Pine Copper Company, a subsidiary of the Copper Range Company.

The Calumet Division's unwatering of the Osceola Lode, which is believed to be the largest underground dewatering pumping operation in the world, made rapid progress in 1954. MINING WORLD described this gigantic and unusual operation in its November 1954 issue. Late in the year Calumet attempted to speed up this project by using divers to open a valve located in a crosscut some 360 feet underwater. This operation failed due to lack of time at which the divers could stay submerged.

Mine development by White Pine increased by year's end to a point where about 3,000 tons per day were mined from development headings. All surface construction work was virtually completed by the end of the year, and the mill began operation at partial capacity in October. Smelter production should begin in early 1955. When in full production, White Pine's operation will be geared to mining 10,500 tons of ore per day producing 75,000,000 pounds of copper annually.

Michigan's production of copper, in terms of recoverable metal, from its 10 mines and two tailings reclamation plants totaled 23,350 tons in 1954. This is a decrease from 1953 of three percent which resulted from reduced output by the eight mines and one tailings reclamation plant owned by Calumet, more than offsetting the new production by White Pine. Production from Copper Range's Champion mine and the tailings reclamation operation of the Quincy Mining Company remained virtually the same.

In the Wisconsin zinc-lead district seven percent less zinc and 41 percent less lead was mined during 1954 as compared to 1953. Output for 1954 totaled 15,604 short tons of zinc and 1,240 short tons of lead. Because of the low price of zinc, only the Vinegar Hill Zinc Company and the Calumet & Hecla Inc. mines were in production during the entire year.

There were two important developments in this district during 1954. In August the Eagle-Picher Company, Mining and Smelting Division bought out all Calumet & Hecla's Wisconsin holdings and took over operations during this same month. Davis Mining Enterprises completed construction of a 450-ton mill and began production in June.

During June the Eagle-Picher Company reopened its mines in Wisconsin and Illinois and its Graham central mill near Galena, Illinois. Other zinc-lead producers who operated during part of 1954 were the Mifflin Mining Company and George M. Baker.

## Montana

### 53-Day Strike Drops Mineral Production

The year of 1954 saw a marked decrease in Montana mineral and metal production. The main contributing factor to this decline was the 53-day-long strike at the Montana plants of the Anaconda Copper Mining Company by the United Mine Mill and Smelter Workers Union. As Anaconda is the main producer of lead, zinc, copper, gold, silver, and manganese, the production decline for these metals is explained by the strike.

The mines in Butte still produce the greatest amount of metallic mineral wealth in Montana. During the operating part of the year, the Kelley mine produced approximately 12,000 tons of crude copper ore per day. Anaconda, however, closed three producing mines during 1954: the Belmont-copper producer, Badger State-zinc producer, and the Travona-manganese producer. The other producing mines worked at or near capacity. A small open pit was operated in 1954 by Anaconda just west of Meaderville to produce low-grade copper ore.

The surface of the famous Butte Hill has changed considerably in the past year; buildings and other surface equipment have been moved away from the settling area and many caved blocks have caved to the surface because of the mining system, block caving, employed at the Kelley mine.

The production of two metallic ores increased during 1954: chrome and tungsten. The American Chrome Company reached its production goal of 1,000 tons of crude ore per day in its mine near Nye, Montana. The mine is located in the high mountains of the picturesque Beartooth Range, while the mill is located at a lower elevation in a valley. The ore is transported downhill from the mine to the mill by an aerial tramway.

The production of tungsten ore increased greatly, principally due to the full year operation of the Brown's Lake mine and mill of the Minerals Engineering Company located near Glen, Montana. The powellite ore occurs in a wide, gently dipping tactite body which is being mined by open-pit methods. Overburden is broken by blasting, loaded with a 105 Eimco Rocker Shovel into Dumpsters, and then dumped over the mountain side after a short haul. Broken ore is loaded into dump trucks by tractor loaders and the ore then transported to the mill, 9½ miles away.

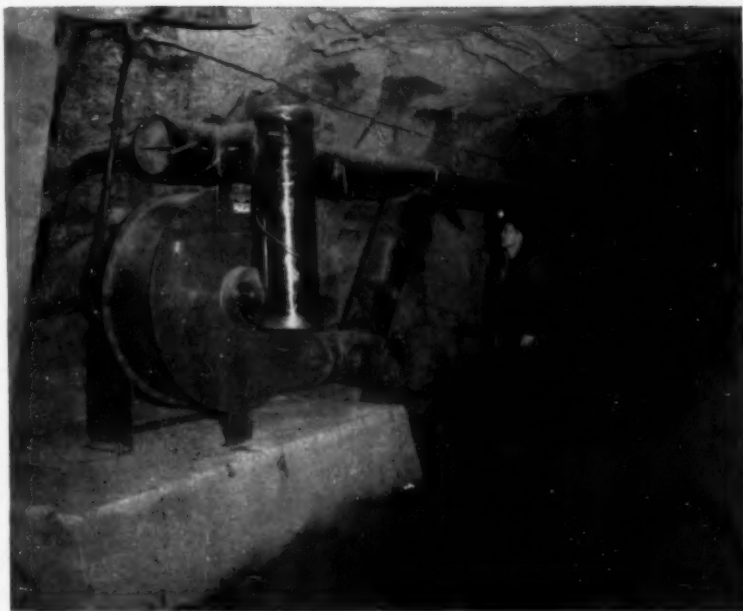
Another producer of tungsten ore in Montana is the Pony Tungsten Enterprise Company which has been mining and milling scheelite-bearing ores from the Strawberry mine located 2 miles west of Pony, Montana. Other areas which are being actively prospected for tungsten minerals are in the vicinity of Storm and Silver Lakes, 15 miles west of Anaconda. However, little production has come from these areas.

Considerable mining activity is taking place near Philipsburg, where manganese-bearing ores are being mined. Some zinc and silver ores are also being mined. Although there is still a large amount of prospecting being done for uranium minerals in Montana, there were no major producers in 1954; however, one or two mines shipped some uranium ore.

Nonmetallics are still extremely important to Montana's mining industry.

CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

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## Montana Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	246,475	12,386,925	128,036	21,259	60,710	\$59,181,627
1942	146,892	11,188,118	141,194	20,050	54,715	60,129,853
1943	59,586	8,450,370	134,525	16,324	37,606	53,642,658
1944	50,021	7,093,215	118,190	13,105	36,127	46,039,855
1945	44,597	5,942,070	88,506	9,999	17,403	35,405,505
1946	70,507	3,273,140	58,481	8,280	16,770	29,957,206
1947	90,124	6,326,190	57,900	16,108	45,679	48,890,964
1948	73,091	6,930,716	58,252	18,411	59,095	56,422,609
1949	52,274	6,327,025	56,611	17,996	54,195	49,003,447
1950	51,764	6,590,747	54,478	19,617	67,678	54,956,689
1951	30,502	6,393,768	57,406	21,302	75,888	73,149,813
1952	24,161	6,138,185	61,948	21,279	82,185	70,521,092
1953	24,768	6,690,000	77,617	19,949	80,271	75,162,000
1954 <sup>1</sup>	22,440	5,124,600	59,800	14,738	61,142	58,526,882

<sup>1</sup> Estimated by U. S. Bureau of Mines.

There are several phosphate mines producing ores, both for the fertilizer and the elemental phosphorus industry. Barite and fluorspar were also produced in 1954. Talc, mined in Beaverhead and Madison counties, was shipped out of the state for further refining. The Zonolite Company at Libby installed a new wet processing plant to handle the lower grade vermiculite ores from its open-pit mine north of Libby.

Work is progressing rapidly on the aluminum plant of the Anaconda Aluminum Co. at Columbia Falls after a work stoppage during part of 1954.

## Nevada

### Nevada Moves Up to Rank Third in Cu Production

Nevada's copper production record of 1953—61,850 tons—the largest for the past 35 years, was broken in 1954 by an estimated output of 71,630 tons. This increased output was due to full production from Anaconda Copper Mining Company's Weed Heights mine near Yerington, and the opening of new pits by the Nevada Mines Division of Kennecott Copper Corporation and Consolidated Coppermines Corporation in White Pine County. As a result of this increased production Nevada moved up ahead of Montana to become the third largest copper producing state.

Production of tungsten in Nevada increased greatly over that of 1953. In 1954 508,000 short ton units of 60 percent WO<sub>3</sub> were produced as compared to 323,500 units for 1953. The largest producers of this metal were Gatchell Mine, Inc., Humboldt County; Nevada-Massachusetts Company, Pershing County; Wah Chang Mining Corporation, Lincoln County; Gabbs Exploration Company,

Nye County; and Nevada Scheelite Division of Kennametal, Inc., in Mineral County.

Zinc and lead production in 1954 dropped sharply from that of 1953. This was, of course, caused by the low market price which forced Nevada's largest producer of these metals, Combined Metals Reduction Company at Pioche, to almost cease lead-zinc mining.

The Eureka district, Eureka County, began to see a revival. Eureka Corporation, Ltd. reportedly drilled out a large high-grade gold, silver, zinc, lead ore body in this district near the Fad shaft. A new shaft was sunk and lateral work started to develop the ore body. Also, in the Eureka district, Consolidated Eureka Mining Company discovered high-grade ore during 1954 on the 39 level of its main shaft. Several hundred tons of this ore shipped to the smelter was valued at better than \$175.00 per ton.

In 1954 Nevada produced 108,900 short tons of manganese ore. Manganese, Inc., one of the largest producers of metallurgical-grade manganese, operated its Three Kids mine and beneficiation plant near Henderson during most of last year. Another important producer of manganese was the Combined Metals Reduction Company which has mines near Pioche, and a ferro manganese plant at Henderson.

Titanium Metals Corporation of America at Henderson continued to be one of the most important producers of titanium metal. The metal is extracted from titanium ores imported from Australia.

Iron ore production in Nevada increased from 325,000 gross tons in 1953 to 442,081 gross tons in 1954. Some of this was exported to Japan and the rest supplied to domestic consumers.

The increase in the price of mercury stimulated interest in this metal during the later part of 1954. Nevada ranks second in United States mercury production producing 4,750 flasks in 1954, while 3,254 flasks were produced in 1953.

## Nevada Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	366,403	5,830,238	78,911	9,623	15,129	\$38,959,420
1942	295,112	3,723,435	83,663	5,378	10,197	35,840,168
1943	144,442	1,620,280	71,068	4,790	13,647	28,351,601
1944	119,056	1,259,636	61,232	6,605	20,699	27,371,513
1945	92,265	1,043,380	52,595	6,275	21,457	24,186,294
1946	90,680	1,250,651	48,616	7,175	22,649	27,026,416
1947	89,063	1,337,579	49,603	7,161	16,970	31,366,282
1948	111,532	1,790,020	45,242	9,777	20,288	34,055,480
1949	130,399	1,800,209	38,058	10,626	20,443	29,615,777
1950	178,447	1,537,217	52,569	9,408	21,606	38,181,872
1951	121,036	981,669	56,474	7,148	17,443	41,280,596
1952	117,203	941,195	57,537	6,790	15,357	40,086,746
1953	101,799	697,086	61,850	4,371	5,812	47,177,723
1954 <sup>1</sup>	78,539	588,880	71,630	3,440	1,150	47,014,631

<sup>1</sup> Estimated by U. S. Bureau of Mines.



Cordero Mining Company in Humboldt County was the only important producer during the past year. However, Sonoma Quicksilver Mines, Inc. has developed a property near Winnemucca, constructed a 100-ton furnace plant, and began production in early 1955.

Excitement in uranium rapidly increased with discoveries having been made in almost every county in the state. A few shipments of uranium ore have been reported with several properties giving indications of becoming consistent producers.

The nonmetallic mining industry's production in Nevada for 1954 remained approximately the same as for 1953. Total value (metallic and nonmetallic) amounted to \$86,871,000 which is an increase of \$13,000,000 over that of 1953.

## New Mexico

### Potash Output Increases; New \$3,000,000 U<sub>3</sub>O<sub>8</sub> Mill

Potash continued to be by far the major segment of New Mexico's mining industry. Production of this mineral increased to 1,807,000 short tons (K<sub>2</sub>O equivalent) in 1954, a five percent gain over the 1,721,000 tons produced in 1953. The five producing companies, all of which operate in the Carlsbad region, are the Duval Sulphur and Potash Company, International Minerals and Chemical Corporation, Potash Company of America, Southwest Potash Corporation, and the United States Potash Co., Inc.

The main product of all of the companies refineries was 60 percent or higher muriate of potash. In addition, Interna-

tional Minerals and Chemical operated a chemical plant for the production of potassium sulphate, refined potassium chloride, magnesium oxide, and hydrochloric acid. The Potash Company of America also operated a plant in Texas for producing potassium sulfate and hydrochloric acid from potassium chloride supplied by their refinery at Carlsbad.

Leasing and exploration of land in the Carlsbad area by National Farmers Union and Freeport Sulphur Company were reported during the year. Both companies plan on beginning construction of potash refining facilities in 1955.

Exploration and mining of uranium increased throughout the year. Most of this activity was in Valencia, McKinley, and San Juan counties. The largest mines operating in this district are the Poison Canyon of the Haystack Mountain Development Company (subsidiary of the Atchison, Topeka & Santa Fe Railway) in McKinley County, and the Jackpile mine of the Anaconda Copper Mining Company which is located in Valencia County.

### New Mexico Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	27,845	1,328,317	73,478	4,668	37,862	\$25,471,416
1942	11,961	676,170	80,100	4,608	46,461	29,542,885
1943	5,563	463,583	76,163	5,723	59,524	34,042,378
1944	6,918	535,275	69,730	7,265	50,727	32,178,026
1945	5,604	465,127	56,571	7,662	40,295	26,386,781
1946	4,009	338,000	50,191	4,899	36,103	26,552,417
1947	3,146	515,833	60,205	6,383	44,103	38,374,269
1948	3,414	537,674	74,687	7,653	41,502	46,799,576
1949	3,249	380,855	55,388	4,652	29,346	31,029,120
1950	3,414	338,581	66,300	4,150	29,263	37,437,915
1951	3,959	443,267	73,558	5,846	45,419	54,697,048
1952	2,949	479,318	76,112	7,021	50,975	56,559,692
1953	2,614	205,000	72,477	2,943	13,373	45,723,959
1954 <sup>1</sup>	3,500	107,800	60,380	870	7	36,323,978

<sup>1</sup> Estimated by U. S. Bureau of Mines.

The highlight in New Mexico uranium was the first production in November from a new processing plant owned and operated by Kerr-McGee Oil Industries, Inc. Anaconda's Bluewater mill recovering uranium from a limestone gangue by the carbonate leach process, operated throughout the year.

Copper production dropped because of a strike and cutting back to a six-day and then a five-day work week during part of the year at the Chino open-pit of Kennecott Copper Corporation at Santa Rita where the bulk of the state's copper ore is mined. Output of copper during 1954 was 60,380 tons, 17 percent below that of 1953.

The zinc and lead mining industry was in a sad condition during 1954. This past year saw a full year's idleness of all the zinc and zinc-lead mines in the state for the first time in more than 50 years. Lead production was the smallest since 1921, and silver the lowest since the beginning of annual records in 1875.



MANGANESE, INC. at Henderson, Nevada was the largest single domestic producer of manganese in 1954. The 1,200-ton flotation mill, rebuilt following a fire, reached full production

in the early part of the year. In the background is the open-pit mine. Mill, right center, supplies flotation concentrates to the nodulizing kilns, center.

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# Oregon

## First Ferronickel; Activity in Cr and Hg

The most important mining development in Oregon for 1954 was the first production of ferronickel, from Hanna Nickel Smelting Company's operations near Riddle. The Hanna Coal and Ore Company is mining the nickel silicate ore for Hanna Nickel Smelting by open-pit methods. When in full production, 1,800 tons of ore will be handled by the smelting plant each day. This will be reduced to approximately 54 tons of ferronickel, containing not less than 25 percent nickel or more than 75 percent iron.

## Oregon Production of Gold, Silver and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Dollar Value
1941	96,565	276,158	\$3,576,154
1942	46,233	87,376	1,680,289
1943	1,097	10,527	45,878
1944	1,369	20,243	62,310
1945	4,467	10,461	163,784
1946	17,598	6,927	621,527
1947	18,979	30,379	691,758
1948	14,611	13,596	523,690
1949	16,226	12,195	578,947
1950	11,058	13,565	399,307
1951	7,927	6,218	283,073
1952	5,509	4,037	196,469
1953	8,350	6,930	295,022
1954 <sup>1</sup>	6,540	14,260	241,806

<sup>1</sup> Estimated by U. S. Bureau of Mines.

Preliminary figures show that approximately 10,000 short tons of chromite ores and concentrates valued at \$785,000 were shipped to the government's purchasing depot at Grants Pass during 1954. This is an increase of more than 66 percent over that of 1953.

In the late part of 1954 Pacific Northwest Alloys, Inc. of Mead, Washington began construction of a processing plant near Coquille to up-grade chromite concentrates. These concentrates will be obtained from a stockpile accumulated during World War II by the now defunct government-owned Metals Reserve Company. Up-graded concentrates will then be shipped to another plant operated by Pacific Northwest near Spokane, Washington where ferrochrome will be produced.

Also near Coquille, the Mineral Sands Company of Lansing, Michigan laid plans to open a large open-pit chrome mine and construct a processing plant. Initial work at the mine site was scheduled to begin in early 1955.

Near the end of 1954 several mercury mines were being re-opened. Among these were the Bonanza mine near Sutherlin which is owned by the Bonanza Oil & Mine Corporation; and the Horse Heaven mine being operated by the Cordero Mining Company.

Again, as in the past 10 or more years, the nonmetallic industry furnished the greater part of Oregon's mineral production. Sand, gravel, stone, and Portland cement comprised the largest value of these nonmetallics.

## South Dakota Edgemont Uranium Ore Bodies Justify Mill

Production of gold and silver in South Dakota in 1954 was 535,135 ounces of

gold and 142,265 ounces of silver, compared to 534,987 ounces of gold and 138,642 ounces of silver in 1953. The value of these metals produced in 1954 was \$18,729,725 for gold and \$128,757 for silver, compared to \$18,724,545 for gold and \$125,478 for silver in 1953.

The Homestake Mining Company of Lead and the Bald Mountain Mining Company of Trojan continued to be the only gold and silver producers in the state.

Development and production of uranium ore in the Edgemont district increased to a point where reserves are reported to justify erection, operation and amortization of a 100-ton processing plant over a period of five years. The AEC has expressed its belief that a 200-ton plant should be constructed.

Milling agreements have been entered into by three South Dakota uranium mining companies: Edgemont Mining Company, Mining Research Corporation, and Black Hills Uranium Company. This agreement affects 90 percent of the present ore reserves of this district. These three companies then entered into an agreement with the Climax Molybdenum Company for the purpose of constructing a mill at Edgemont, if a satisfactory contract could be secured from the AEC.

The most recent uranium discovery in South Dakota was in the Edgemont district by the Edgemont Mining Company. This discovery has temporarily shifted

## South Dakota Production of Gold, Silver and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Dollar Value
1941	600,637	170,771	\$21,143,732
1942	522,098	186,937	18,406,363
1943	106,444	35,886	3,751,059
1944	11,621	5,445	410,607
1945	55,948	26,564	1,977,070
1946	312,247	86,901	10,998,861
1947	407,194	111,684	14,359,766
1948	377,850	94,693	13,323,894
1949	464,650	109,383	16,363,011
1950	567,996	142,069	20,008,436
1951	458,101	139,590	16,159,871
1952	482,534	132,102	17,008,249
1953	534,987	138,642	18,850,023
1954 <sup>1</sup>	535,135	142,265	18,858,482

<sup>1</sup> Estimated by U. S. Bureau of Mines

major exploration efforts from the northern to the southern part of this district.

Uranium prospecting has continued on an ever-increasing scale and uranium-bearing formations have been found to extend over most of the western edge of the state.

Bentonite continued to show a decline in output in 1954 as many of the minable deposits in South Dakota have been exhausted. However, the processing plants of the International Minerals and Chemical Corporation and the American Colloid Corporation located at Belle Fourche operated continuously during the year processing Wyoming bentonite.

The production figures for the pegmatite minerals mined in the state during

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1954 are not yet available, but it is believed that they will be considerably lower than for 1953. Due to a decline in the demand for feldspar in 1954, the two grinding plants of the Consolidated Feldspar Division of the International Mineral and Chemical Corporation, located at Keystone and Custer, operated on a reduced schedule for at least part of the year. The spodumene flotation plant of the Lithium Corporation of America at Hill City was not operated after mid-summer because of a water shortage.

The Monarch Mines, Inc., of Custer, contract mica processors for the General Services Administration in the federal government's mica purchasing program, drastically curtailed operations during the last quarter of the year because of the small amount of mica being produced.

The Uranium and Allied Minerals Corporation leased the mill of the Holy Terror Gold Mining Company at Keystone during the year for the purpose of beneficiating pegmatite rock. After re-vamping the mill and installing additional equipment, the plant was put into operation during the last quarter of the year producing spodumene concentrates by flotation, as well as some mica, beryl, and spodumene by hand sorting. The plant has a capacity of approximately 85 tons per day.

## Southern

### New Florida Phosphate Production Record

In Florida phosphate mines operated near capacity producing an estimated 9,500,000 long tons as compared to 9,331,000 tons in 1953. Almost the entire production consisted of Florida land pebble phosphate.

Many phosphate mining companies completed or began new developments during the year. International Minerals and Chemical Corporation completed its \$14,000,000 Bonnie chemical plant near Bartow and placed it in operation producing mostly a grade of phosphate suitable for mineral feed. Later in 1954 a section capable of producing 200,000 tons of triple superphosphate per year was added. Uranium is recovered at the Bonnie plant as a byproduct.

Davison Chemical Company began operation of its new 200,000-ton-per-year triple superphosphate plant near Bartow. The American Agricultural Chemical Company purchased a new Bucyrus-Erie 650-B dragline and increased the capacity of its washing, recovery, and drying facilities. Armour Fertilizer Works began developing a new mine and erecting a 770-B dragline to be used at this mine. Virginia-Carolina Chemical Corporation at Nichols started operation of new handling, wet storage, drying, and grinding units. Virginia-Carolina also put into operation at Nichols

a new concentrated superphosphate plant with a uranium extraction unit.

Increased interest and activity in Florida rutile and ilmenite were reported during the year. The \$3,000,000 mine and plant under construction and development by Humphreys Gold Corporation for the E. I. du Pont de Nemours and Company near Lawtey is expected to begin production in early 1955. Output, when in full operation, will be 100,000 tons of ilmenite concentrates a year. Du Pont's other ilmenite plant at Trail Ridge continued operation during the year.

The Crane Company prospected for titanium minerals on the Gulf Coast of Florida, west of Panama City, and reported discovery of a deposit in the Seagrove Beach area at the mouth of Choctowatchee Bay.

Texas sulfur production by the Frasch process in 1954 continued to decline for the second successive year, but is still the largest in the United States. Nine companies produced an estimated 3,450,000 long tons valued at \$75,100,000 as compared to 3,598,269 tons valued at \$78,276,030 in 1953. Gypsum output from Texas mines in 1954 was estimated to approximate the 1,067,854 tons produced in 1953.

In Louisiana output of sulfur continued to increase to new records in 1954 as a result of offshore operations. An estimated 2,030,000 long tons were produced by the Frasch process compared to 1,609,364 in 1953. The Chalmette, Louisiana plant of the Kaiser Aluminum and Chemical Corporation remained the nation's largest aluminum reduction works in 1954, with an annual ingot capacity of 200,000 tons.

Arkansas led the states in the production of barite in 1954 by producing approximately 400,000 tons valued at over \$4,000,000. Barite output in 1953 amounted to 380,763 tons. All of this production was from Hot Spring County. Arkansas also was the principal source of domestic bauxite with production reported at nearly 2,000,000 long tons valued at \$16,000,000. This is an in-

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crease of about 200,000 tons over that of 1953. Production of manganese ore in Arkansas doubled in 1954 due to the government's purchase program. Independence County accounted for practically all of the 12,200 tons produced.

## Tennessee

### American Zinc Begins Large Drilling Program

Tennessee production of gold, silver, lead, zinc, and iron ore declined during 1954, while that of copper, phosphate, pyrite, and manganese ore increased.

Zinc production continued the decline which started in 1953, dropping 21 percent below that of the previous year. Companies active in zinc mining operations were the American Zinc Company of Tennessee, the Tennessee Coal and Iron Division of the United States Steel Corporation, and The New Jersey Zinc Company.

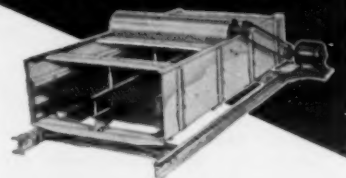
American Zinc operated its Mascot No. 2 mine in Knox County and the Grasselli and North Friends Station mines in Jefferson County. Sinking of a new shaft (named the Coy) southeast of Jefferson City was begun by American Zinc. The shaft is expected to be completed and put into production by early 1956. South of North Friends Station, American Zinc began exploring an area covering some 7,700 acres under a contract with the Defense Minerals Exploration Administration. About 450,000 feet of hole are planned in this area over the next two years. Ten diamond drills are now being operated with results so far reported as encouraging.

The Utah Construction Company completed sinking of a 1,300-foot-deep main shaft and 12-foot circular ventilation shaft for New Jersey Zinc near Jefferson City. Crosscutting between the shafts began late in the year. Tennessee Coal and Iron operated its Davis-Bible zinc mine in Jefferson County.

Total copper production in Tennessee increased 15 percent in 1954. The Tennessee Copper Company operated the Boyd, Eureka, Calloway and Mary mines during the year. Tennessee Copper completed construction and put into operation its Copperhill sintering plant late in the year. The plant is used for producing sulphur dioxide gas used by TCC for making sulphuric acid. All Tennessee's output of gold, silver, and pyrite comes from TCC's Copperhill operation; zinc is also produced as a by-product. The state's lead output comes from the smelting of zinc ores.

Phosphate production for the year was estimated at 1,600,000 long tons, slightly higher than last year even though interruptions were caused by lack of power due to low water levels. TVA continued mining phosphate in the Bear Creek and Knob Creek areas and operated its washing plant near Columbia. Phosphate mining companies which constructed new plants during the year were the Owens Phosphate Company which completed construction of a washing plant near Centerville; M. C. Boyle Phosphate Company which completed a drying and grinding plant and continued construction of a washing plant near Anderson Bend; Mine Equipment Company who

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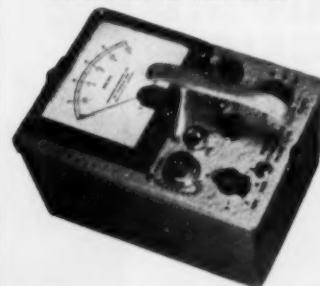
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**Tennessee Production of Gold, Silver, Copper, Lead, Zinc and  
Dollar Value from 1950 Through 1954**

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1950	160	39,958	6,851	113	35,326	12,954,874
1951	108	24,960	7,069	14	38,639	17,517,206
1952	241	57,569	7,620	18	38,020	16,392,294
1953	293	68,935	7,829	9	38,465	13,415,807
1954 <sup>1</sup>	271	61,193	9,036	5	30,282	12,154,466

1. Estimated.

constructed a crushing, screening, and scrubbing plant on Rutherford Creek to handle ore mined near Columbia.

Tennessee's iron ore production was estimated at 6,000 gross tons, a decrease of 53 percent from that of 1953. The Monroe Mining Company operated the Lindermann mine in Monroe County producing brown iron ore. A new mine was opened to produce red iron ore near Kingston by the Rockwood Mining Industry.

Estimated output of manganese ore was 9,000 gross tons, about four times greater than that of 1953. The Valley Mining Company, Ltd., Ore Processing Corporation of Virginia, and the Colitz Mining Company mined manganese ore in Johnson County. Tennessee Manganese Company and the Lewis Mining Company mined ore in Unicoi County. All of the manganese mined in the state was of metallurgical grade and was sold to the General Services Administration.

Cramet, Inc., a subsidiary of the Crane Company, continued construction of a 6,000-ton-per-year titanium plant

at Chattanooga under a contract with the Defense Materials Procurement Agency.

## Utah

### \$9,000,000 U<sub>3</sub>O<sub>8</sub> Sale; Copper Output Drops

Utah's production of copper, its most important metal, decreased considerably in 1954 from that of 1953. This drop resulted from a series of strikes and reducing the work week at Bingham Canyon from six to five days during the early months of the year. However, the Kennecott Copper Corporation's work week was increased from six to seven days in December.

The greatest interest in the Utah mining industry was again uranium. The year saw many large mining companies and financing firms become actively associated with this metal. During the late spring

and early summer sales of uranium stocks, for mines mostly in Utah, rose to tremendous figures in Salt Lake City, New York, and San Francisco. The most important mining transaction of the year was in uranium when Vernon Pick sold his Delta mine in the Temple Mountain area to the Atlas Corporation for \$9,000,000.

The Hidden Splendor Mining Company, a subsidiary of the Atlas Corporation, began extensive exploration and development of its ore reserves in the latter part of 1954. This work was done on the claims purchased from Vernon Pick.

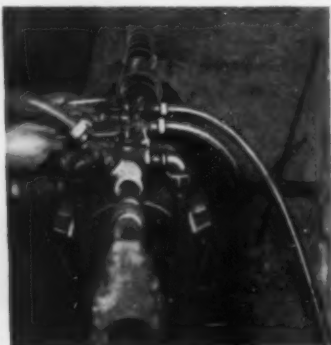
The past year saw the famous Mi Vida mine of the Utex Exploration Company, in the Big Indian district near Moab, become fully mechanized. A modified room and pillar method of mining is employed using off-track equipment. Mine production has reached a maximum of 800 tons per day.

During 1954 U & I Uranium, Inc., an operating company for six Kellogg, Idaho mining firms, drilled out a major uranium ore body in the Big Indian district. The ore body is to be mined for U & I by the Hecla Mining Company.

Cal Uranium Company finished sinking its central hoisting shaft in early 1954 and began production of uranium-bearing ore. The Cal Uranium shaft is also located in the Big Indian district, approximately two miles north of the Utex Mi Vida mine.

Homestake Mining Company began uranium production from two Utah mines in 1954. Both of the mines, the Little Beaver and La Sal, are in the Big Indian district.

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Utah mills which treated uranium ores during 1954 were the AEC plant at Monticello, operated by The Galigher Co., and the Vitro Uranium Company plant at Salt Lake City. In addition, AEC ore-buying depots were operated at Moab, White Canyon, Marysvale, and Thompsons.

Most of the Utah lead-zinc mines remained closed in 1954, however, a slight increase in the price of these metals saw the United Park City Mines Corporation re-open its Ontario unit at Keetley, near the end of the year after a shut-down of 2½ years. Production had reached about 250 tons per day by the end of 1954. A new discovery of high-grade lead-silver ore was made on the Daly-West section of the Park City properties. Initial assays were reported to show that the ore contained more than 20 percent lead, and 50 ounces of silver per ton.

Early in December the zinc concentrator of International Smelting & Refining Company's Tooele smelter went back into operation to handle Park City ore. The smelter had been closed down since last July. It is also expected that the lead smelter will be put back into operation sometime during this year.

Tungsten production rose over that of 1953. Most of this was from the treatment of old tailings by the HM&S Milling Company and The Salt Lake Tungsten Company at Salt Lake City. Near the end of the year The Salt Lake Tungsten Company discontinued treating tailings. They are now entirely refining low-grade concentrates from their tungsten mining and milling operations, as well as purchasing custom concentrates.

Production of iron and fluorspar decreased in 1954 because of less demand by Utah's two steel plants at Ironton and Geneva.

Nonmetallic minerals are assuming an increasingly important position in Utah's mining industry. During 1954 approximately one-fifth of the total value of mineral production was contributed by the nonmetals.

Outlook for increased production of Utah phosphate was seen near the end of the year when Western Phosphates, Inc. announced plans for a 50 percent increase in output of treble superphosphates and ammonium phosphates from its Garfield plant.

Recovery of potash from the salt flats near Wendover was increased by Bonneville, Ltd., during 1954. A former dragline was replaced with a larger and more modern machine, and improvements made in the processing plant, all of which helped to raise production.

Potash Chemical Company has been conducting an extensive exploration diamond drilling program south of Green River in Grand County for Potash. Under lease to Potash Chemical are some 15,000 to 20,000 acres of government land.

The large sulphur deposits at Sulphurdale were activated again in early 1954 when American Sulphur Refining Company completed a new \$500,000 plant. The plant was designed for an initial production of 100 tons of refined crystalline sulphur per day with an outlook toward later expansion. Continental Sulphur and Phosphate Company of Texas has purchased a 50 percent interest in this new plant.

The total value of the state's mineral production, exclusive of uranium and some shipments of manganese ore, amounted to \$248,444,000 for the past year as compared to \$299,223,000 in 1953.

### Utah Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	356,501	11,395,485	266,838	69,601	42,049	\$ 97,796,623
1942	391,544	10,574,955	306,691	71,930	45,543	113,552,848
1943	390,470	9,479,340	323,989	65,257	46,896	124,362,540
1944	344,223	7,593,075	282,575	52,519	38,994	111,036,247
1945	279,979	6,106,545	226,376	40,817	33,630	90,018,641
1946	178,533	4,118,453	114,284	30,711	28,292	60,202,627
1947	421,662	7,780,032	266,533	49,698	43,673	158,624,849
1948	368,422	8,045,329	227,007	55,950	41,490	149,763,677
1949	314,058	6,724,880	197,245	53,072	40,670	121,649,828
1950	457,551	7,083,808	278,630	44,753	31,678	159,415,431
1951	432,216	7,310,665	271,086	50,451	34,317	182,897,139
1952	435,507	7,194,109	282,894	50,210	32,947	185,780,497
1953	483,430	6,725,807	269,496	41,522	29,184	195,289,033
1954 <sup>1</sup>	407,000	5,975,000	211,300	43,700	32,300	164,221,877

<sup>1</sup> Estimated by U. S. Bureau of Mines.

## Washington

### First U<sub>3</sub>O<sub>8</sub> Discovery; Zn and Pb Output Down

Discovery of Washington's first commercial uranium deposit brightened what otherwise was a year of declining mineral production, development, and exploration.

Although uranium occurrences had been reported over the last several years in Pend Oreille County, northern Stevens County, and Lincoln County, it remained for John and James LeBret, members of the Spokane tribe of Indians, to start the state's first uranium rush.

Their discovery of autunite and torbernite along a granite-argillite contact on the sparsely settled Spokane Indian reservation in southwestern Stevens County set off a fall leasing and staking spree. By year's end, applications had been filed for prospecting leases on more than 16,000 acres of state-owned lands around the reservation. Tribal members, with a monopoly on prospecting and leasing land within the reservation, had filed to prospect more than 75,000 acres of tribal land.

First applications for state leases were made by Arizona residents connected with Phelps Dodge Corporation and cov-

ered about 2,700 acres adjacent to the reservation's northern boundary. Very little prospecting had been done on or off the reservation before snowfall and no additional commercial discoveries were reported by government officials. Midnite Mines, formed to exploit the reservation discovery, made initial shipments in December under contract with the U. S. Atomic Energy Commission. A total of 216 tons was shipped to a Salt Lake processing plant which reported the ore would run at least 0.30 percent uranium oxide.

Zinc production declined 34 percent and value of the output was nearly \$3,000,000 less than in 1953. Only American Smelting and Refining Company's Van Stone mine in northern Stevens County increased production, and it received an above-market price most of the year under a government contract. It was the state's leading zinc producer.

Lead production dropped 9 percent, principally because of sharply curtailed operations by Goldfield Consolidated Mines Company in Stevens County and a six-month strike at the Grandview mine in Pend Oreille County, operated by American Zinc, Lead and Smelting Company.

Copper and silver production declined slightly. Gold output was up for the second consecutive year, increasing 6 percent. This resulted from higher output by Knob Hill Mines in Ferry County and



PHOSPHATE MINING is rapidly expanding in Idaho, Wyoming, and Montana. One of these important phosphate mines is that of the San Francisco Chemical Company's open pit at Lefe, Wyoming, where this picture of a large blast was taken.



the Holden mine of Howe Sound Company in Chelan County.

Penticton Tungsten Mines, Inc. shipped initial tungsten concentrates from open-pit mining operations at the old Germania mine in southwestern Stevens County.

The old Turk copper camp in southwestern Stevens County was revived during the year by Alpine Uranium Corporation of Salt Lake City, which remodeled and enlarged the old Deer Trail concentrator and started milling Turk mine dump ore. Chewelah Copper Company continued development work in the old Eagle Mountain copper camp near Chewelah, central Stevens County, and purchased the 200-ton Bonanza flotation concentrator near Colville.

Northwest Magnesite Company, Chewelah, Stevens County, again was the nation's number one producer of natural magnesite despite a 25 percent production decline.

## Wyoming

### AEC Announces Uranium Buying Depot at Riverton

The year 1954 witnessed rapidly increasing interest in Wyoming uranium as numerous and apparently important discoveries were made. Some uranium was produced during the year, but for the most part activity was confined to exploration and development. Prospecting and staking of uranium claims continued throughout the year despite the rugged winters. A number of discoveries were reported made in the Gas Hills, Green Mountain, Crooks Mountain, and Owl Creek Mountain areas of Fremont County, around the perimeter of the Wind River Basin.

The principal producer in the Gas Hills area during 1954 was Lucky Mc Inc. The company shipped numerous carloads of ore to the AEC buying station at than two percent  $U_3O_8$ . Several of these carloads were reported to assay more than two percent  $U_3O_8$ . Several of these companies obtained preliminary production, including Mountain Mesa, Green River Uranium, and Cokeville Uranium.

Expected to materially aid uranium production in Central Wyoming during 1955, and one of the important announcements in uranium during 1954, was the establishment by the AEC of a buying depot at Riverton. The station started operations March 1.

### Washington Production of Gold, Silver, Copper, Lead, Zinc and Dollar Value from 1941 Through 1954

Year	Gold Ounces	Silver Ounces	Copper Tons	Lead Tons	Zinc Tons	Dollar Value
1941	84,176	402,030	8,686	3,903	14,320	\$ 7,874,886
1942	75,396	369,038	8,030	4,851	14,398	8,172,609
1943	65,244	370,440	7,365	5,022	12,703	7,838,012
1944	47,277	321,608	6,164	5,825	11,904	7,195,136
1945	57,860	281,444	5,281	3,802	11,693	7,140,242
1946	51,168	264,453	4,527	2,987	11,329	6,886,748
1947	34,965	293,736	2,240	5,359	13,800	7,313,398
1948	70,075	375,831	5,665	7,147	12,638	11,171,715
1949	71,994	357,853	5,275	6,417	10,740	9,613,307
1950	62,117	363,566	5,057	10,344	14,807	12,652,302
1951	67,405	344,948	4,089	8,002	18,189	14,030,884
1952	54,776	315,645	4,357	11,744	20,102	14,767,054
1953	62,560	321,000	3,740	11,064	32,786	15,067,000
1954 <sup>1</sup>	66,600	313,900	3,600	10,040	21,800	12,323,975

<sup>1</sup> Estimated by U. S. Bureau of Mines.

Uranium interest was further increased with an announcement made late in the year by the Uranium Reduction, Inc. of Lander of its plans to construct a mill in the Gas Hills area. AEC approval is now being sought for this new plant, which is planned to employ a recently perfected process to mill uranium ores at a lower cost.

AEC exploratory crews have been active in central Wyoming for over a year and are regularly calling for bids on additional drilling contracts in the area. It is believed that these AEC drilling programs to date have turned up numerous exceptionally rich uranium deposits, continually expanding the known area of mineralization.

Increased uranium activity was noted elsewhere in the state, as several important discoveries were made in the Newcastle and Devils Tower area of eastern Wyoming. At year's end, the Newcastle, and Edgemont, South Dakota areas were competing for the location of a uranium processing plant.

Another one of the bright spots in the state's mining activities is the Intermountain Chemical Company's trona mine 23 miles west of Green River, where the only mine of its kind in the world is now in full production of 300,000 tons of refined trona annually. During 1954, the company, principally owned by Food Machinery and Chemical Corporation, drilled more test holes over a large area in an attempt to further explore the extent of the trona deposit, which is evidently an old lake bed 1,500 to 1,800 feet underground. They found that the ore body extends under the ridge of hills to the north of the Blackfork River, southward into the arid desert country, westward toward Granger, and eastward toward Green River. Based on these explo-

rations, soda ash will be produced as long as a demand exists. It is estimated that this one body contains enough raw trona to supply the nation's needs for the next two and one-half centuries.

Production of bentonite, one of the state's important industries, was estimated at approximately 1,000,000 tons. Production fluctuates greatly from year to year since most of the concerns operate with huge stockpiles. Much of the production came from the Big Horn Basin, where the operators include the Magnet Cove Barium Corporation at Greysburg and the Mineral Mining Company at Cody.

Iron ore production was down some at the old Sunrise mine in the Hartville uplift area of eastern Wyoming. It supplies most of the ore for the Colorado Fuel and Iron company's furnaces at Pueblo, Colorado. The mine was shut-down for a time during the summer when production was greatly curtailed temporarily at the mill.

The Union Pacific Railroad Company ran into difficulty in its efforts to develop a huge deposit of titanium-bearing iron ore in the Iron Mountain area 25 miles northeast of Laramie on railroad right-of-way land. The company was proceeding with testing and preliminary development work when the federal government stepped in and claimed it owned the mineral rights on the land.

Union Pacific was successful in defending its title in the lower courts, but the case has been appealed. Until the legal actions have an opportunity to run their full course, all development plans have been shelved by the railroad, which estimated that the Iron Mountain deposit contains at least 90,000,000,000 pounds of iron and 33,000,000,000 pounds of titanium oxide, which, when treated, would in turn yield up to 20,000,000,000 pounds of titanium metal.

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## CARIBBEAN

### CUBA

Area . . . . .	44,206 square miles	Currency Unit . . . . .	Peso
Capital . . . . .	Havana	Value . . . . .	\$1.00
Chief Mineral Products—	Nickel, manganese, copper, chromite, iron.		

Two events in 1954 foretold greatly increased nickel production in Cuba. Money was appropriated for increased yield at the Nicaro mines and for the building of a test processing plant in New Orleans.

The U. S. government set aside \$43,000,000 for expansion of its leased (from the Freeport Sulphur Co.) Nicaro mines. (The U. S. had already invested \$60,000,000 in the mines.) Plant expansion was begun late in 1954 and may be completed in 1955.

Nicaró production will then be boosted from its current 30,000,000 pounds yearly to 50,000,000. Cuban nickel production will then amount to almost 15 percent of the free world's total—second only to Canada.

The General Services Administration allocated \$18,000,000 for the construction of a pilot plant in New Orleans which will test a new nickel-extracting process. If the process proves economically practicable, Freeport will be able to begin production at Moa Bay mines not leased to the Government.

If the proposed production rate at Moa is achieved, over a period of 30 years 30,000,000 pounds of nickel and 3,000,000 pounds of its byproduct, cobalt, will be produced annually. Ore reserves at Moa Bay are estimated at 4,000,000 tons (1.35 percent nickel).

Manganese production skidded badly during the year. With small demand for the mineral from manganese-surfeited U.S., Cuban production was: first quarter, 59,000 tons; second quarter, 104,000 tons

(due to a backlog of orders); third quarter, 36,000 tons; and fourth quarter, 28,000 tons. Production thus was 115,000 tons off 1953's 342,000 tons. The price dropped somewhat also.

Because of the poor market, Cuban producers toyed with the idea of ending manganese production. Toward the end of the year, however, steel production in the U. S. picked up, and the demand for manganese steadied. Cuban producers now may be able to export at least 100,000 tons this year. (As it is, they are just about breaking even.) In November of last year the producers asked the U. S. government to begin stockpiling Cuban manganese, but they were turned down.

The mining of iron pyrites, which began poorly in 1953, picked up and steadied during '54. The Cortez Mining Company is the sole Cuban producer (in the Matanzas area). Cortez produces approximately 16,000 tons monthly. Iron pyrite is the only Cuban mineral which is not exported to the States. All of it is sent to Europe, and reportedly all of 1953's production has already been sold (for roughly \$11 per ton).

Cuban copper production during 1954 was mainly carried out by Minas de Matahambre, S. A. (in which the American Metals Co. has a small interest). Matahambre produced about 3,000,000 pounds monthly in the form of a concentrate 32 percent copper. The mines are located in Pinar del Río Province.

The Compañía Minera Moa was the major producer of chrome: about 3,500 tons monthly in the Punta Gorda area.

(There was very little production in the chrome-bearing area located between the cities of Camaguey and Minas.)

The U. S. government is backing two two-year projects searching for chrome deposits. Point Four geologists are exploring in Oriente Province, and an Office of Defense Mobilization team is seeking in Camaguey Province. Most Cuban chrome is in the form of refractory chromite.

Iron is produced only by the Compañía Construcciones Cajigas (which also produces most of Cuba's manganese). Cajigas' iron production amounts to about 10,000 tons monthly from mines in Camaguey.

The largest body of iron ore is contained in land on which the mining rights are held by the Bethlehem-Cuba Iron Mines Co., a subsidiary of the Bethlehem Steel Co. Over a quarter of a billion tons—and perhaps as much as 800,000,000 tons—of iron ore are estimated to be contained in Bethlehem holdings in the Nipe Bay region of Oriente.

The iron is not mined because a satisfactory method of separating the iron from other minerals has not yet been developed. The iron occurs with chrome, nickel, and cobalt.

## DOMINICAN REPUBLIC

Area . . . . .	19,300 square miles
Capital . . . . .	Ciudad Trujillo
Currency Unit . . . . .	Peso Oro
Value . . . . .	\$1.00
Chief Mineral Products—	Iron, gypsum, salt.

After several years of mineral exploration and other field work by the Italian

## Caribbean

geologist, Dr. Renato Zoppis, mining in the Republic has been awakened and further continuous and progressive development is expected. Until now, mine development had been on a small scale because of lack of equipment and inadequate transportation facilities. This situation is expected to improve, however, as the deposits currently under development are proving to be quite rich.

When Dr. Zoppis returned to Italy in 1953, the first steps in investigation work had been completed, and several concessions had been granted to firms interested in mining potentially rich deposits. During 1954, the Servicio de Minería functioned without a director, but Dr. Popilio Brouwer, member of the Comisión de Fomento, served as acting head. With a reduced personnel, the main activities of the Service were confined to office work; that is, compilations, studies, and revisions of reports previously completed; map drawings; preparation of plans for 1955, including exploration for uranium. The small Service laboratory continued to analyze samples of minerals available for export.

Minera Panamericana C. por A., which was working the iron ore deposits at Maimon and Hatillo in Sanchez Ramirez, terminated operations in August 1954 and liquidated. A new company has been formed.

The Banco de Credito Agrícola e Industrial de la República Dominicana, a government-sponsored institution and proprietor of three of the richest mines of the country, continued to expand its installations. At present, principal min-

erals being developed by the Banco Agrícola are gypsum, salt, and marble.

In the first two of these deposits, located at Cerros de Sal, in Barahona, the following work was completed or is nearing completion: opening up of new working faces; installing of hauling line and conveyors; construction of storage bins and classifiers; installation of power generator plants; building of a 20-mile-long railroad from Cerros de Sal to Barahona City where harbor improvements have been made; and erection of two Demag cranes on the docks at Barahona. As of the end of the year, nearly \$3,000,000 had been invested in this mechanization of the salt and gypsum mines at Barahona.

Alcoa Exploration Company, a subsidiary of the Aluminum Company of America, carried on a steady program of operation in 1954. At Cabo Rojo in Barahona, Alcoa is building the first Dominican mining town. The senior staff house was started; the office and warehouse were completed and occupied; camp roads were laid out; and temporary structures removed.

A food warehouse was erected and topography work started. A well digging program took over the search for fresh water, and this is still in progress. An airport was constructed to supply Cabo Rojo. Bay soundings were made and dike fill began for the port. Equipment for pile driving is expected in April 1955. The power plant was installed and power lines erected to all parts of the camp. It has been estimated that the firm has spent about \$5,000,000 on these projects.

pany and the local manufacturers of gypsum board.

About 100,000 tons of high quality Portland cement were produced by the Caribbean Cement Company Limited at Rockfort, east of Kingston. The bulk of this output was consumed locally although about 3,500 tons were exported.

The production of cave phosphate remained at the same level as in previous years, some 714 long tons (707 tons in 1953) of dried phosphate being produced, processed, and sold locally as fertilizer by Excella Products Limited, operating at Cousins Cove in the western end of the island.

The work of the Government Geological Survey Department has largely stimulated interest in prospecting for new mineral deposits and a number of companies and individuals have been actively engaged in the search for iron, manganese, copper, etc. The best results were achieved in prospecting for iron ore. New deposits of high-grade magnetite and hematite ore amounting to several million tons were located in the Swift River area on the northern slope of the Blue Mountain Range. Two local companies have been formed to develop these deposits. They are Jamaica Iron Ore Limited, operating in the Swift River area, and Mavis Bank Iron Ore Limited, which will deal with the Glade-Orchard deposit about 17 miles northeast of Kingston. It is intended to commence small-scale mining operations in 1955.

Some further prospecting work has been carried out in the Hope Mine, near Kingston, where lead and zinc were formerly mined. Several prospecting licenses for copper and other minerals have been granted but much more detailed work remains to be done.

Oil prospecting rights for the whole island are still held by Base Metals Mining Corporation of Toronto and it is intended to undertake some test drilling early in 1955.

**Dominican Republic Mineral Production and Dollar Value for 1953 and 1954**

Commodity	Kilograms	1953	Value	Kilograms	1954	Value
Iron ore	91,663,311		\$1,409,847	95,212,749		\$1,313,429
Gypsum	16,214,591		51,142	29,318,300		88,195
Salt	1,675,395		29,925	18,426,270		70,510
Marble	—		—	45,500		1,598
Total			\$1,490,914			\$1,473,732

## JAMAICA

Area ..... 4,411 square miles

Capital ..... Kingston

Chief Mineral Products—Bauxite, gypsum.

In the calendar year 1954 the mineral production of the two chief minerals (bauxite and gypsum) increased. Two United States companies engaged in bauxite mining—Reynolds Jamaica Mines Ltd. and Kaiser Bauxite Company—continued to ship dried or semi-dried ore to the processing plants in the United States at an increased rate. The total exports of kiln-dried bauxite, with an average moisture content of 14 percent, amounted to 1,898,131 long tons as against 1,202,100 tons in 1953. The third company, Alumina Jamaica Limited, a subsidiary of Aluminium Limited of Canada which is converting the bauxite to alumina in the Kirkvine Works at Shooter's Hill, exported 124,113 long tons of alumina during the year as compared with 28,731 tons in 1953.

Gypsum production and exports have increased considerably since the proper-

Currency Unit .... Pound Sterling

Value ..... \$2.80

ties of Bellrock Caribbean Limited were taken over by Jamaica Gypsum Limited, a subsidiary of Panama Gypsum Company (itself a subsidiary of United States Gypsum Company). Large-scale prospecting involving 60 exploratory boreholes was carried out on the properties to estimate the workable reserves. Towards the middle of the year a new large quarry was opened by the company at Brooks. This second quarry is producing a very high quality gypsum and it is intended in the near future to improve the quarrying and transport facilities further. The total gypsum exports in 1954 were three times as great as the previous year, amounting to 159,877 long tons (52,381 in 1953). The crushed high-quality gypsum rock is shipped to the U. S. Gypsum plant at Jacksonville, Florida. 5,937 tons were sold locally to the Caribbean Cement Com-

## HAITI

Area ..... 10,204 square miles

Capital ..... Port-au-Prince

Chief Mineral Products—Bauxite.

The Haiti bauxite deposits which were discovered by Reynolds Mining Corporation in 1943 are now being developed for commercial use.

During the year 1954 a number of buildings including 20 staff houses were constructed. A 12-mile haulage road is under construction from the deposits on the plateau above Miragoane to the shore. The road will be 14 meters wide and will have a maximum grade of approximately 10 percent. It will be suitable for large trucks carrying 25 to 30 tons of ore. Construction of shore installations will start in 1955. These facilities will include storage, dryers, conveyors, a deep water pier, and loading equipment. The ore will be transported in self-unloading ore carriers and conventional ships. A natural port with a minimum of 35 feet of water will accommodate any type of ore ship.

The bauxite deposits are located at elevations ranging from approximately 2,500 feet to 3,000 feet above sea level.

## Caribbean

The deposits contain the same general type of ore that Reynolds Jamaica Mines, Ltd., the sister company, has been shipping for the past two years from Jamaica to the plants of Reynolds Metals Company at Hurricane Creek, Arkansas, and Corpus Christi, Texas.

It is expected that shipments of the Haitian bauxite will commence in the spring of 1956. The ore will be shipped to the Reynolds alumina plant at Corpus Christi, Texas.

## PUERTO RICO

Area ..... 3,423 square miles  
Capital ..... San Juan  
Currency Unit ..... Dollar  
Value ..... \$1.00

Chief Mineral Products—Limestone, concrete aggregates, clay, glass sand.

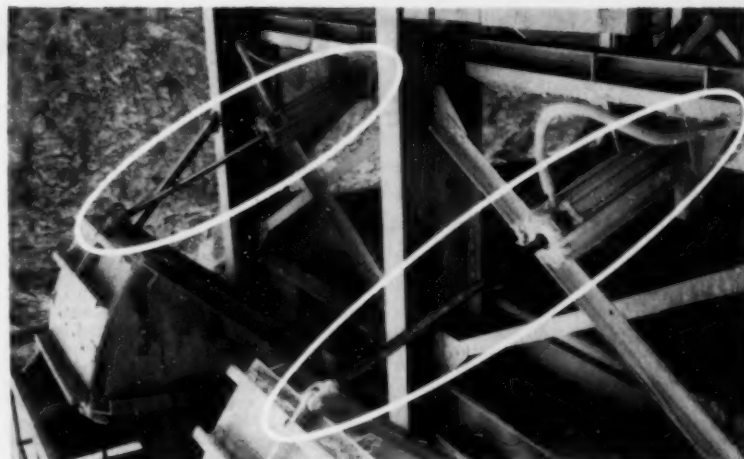
The program for the economic development of Puerto Rico has yielded very appreciable results in the field of mineral production since its inception. From an island with essentially no mineral production before World War II, Puerto Rico has produced measurable quantities of sand, gravel, salt, clay, glass sand, and iron ore.

Much of this increase has been brought about by Puerto Rico's position within the United States tariff wall, low cost of labor, a large undeveloped local market, and favorable tax arrangements for new concerns.

To further assist mineral producers, the Mineralogy and Geology Section of the Department of Industrial Research has recently been organized. This geological survey has initiated a program to map the geology of the entire island through cooperative agreements with the United States Geological Survey and Princeton University. The U. S. G. S. arrangement, under which the Federal Government matches funds furnished by the Commonwealth of Puerto Rico, has thus far resulted in the general mapping of about 10 percent of the island. Princeton University sends two field parties of graduate students to Puerto Rico each summer under the direction of Professor H. H. Hess, financed by the Puerto Rican Mineralogy and Geology Section.

Work by the Insular geological survey will emphasize the study of economic mineral deposits and service to mineral-consuming industries.

Studies completed by the U. S. G. S. personnel in cooperation with the Insular survey include: investigations of the magnetite-bearing beach and dune sands of the north and south coast, a study in which 300,000 tons of commercially-available magnetite were indicated from four areas on the north coast alone; study of the non-swelling Cretaceous bentonite from the vicinity of Aguada in western Puerto Rico, which revealed one bed at least 20 feet thick; and a study of a pyrophyllite-alunite belt on Cerro La Tiza near Comerio in the central part of the island. Currently, active projects cover studies of the nickel-cobalt-bearing laterite of Las Mesas near the city of Mayaguez and a belt of magnetite-hematite deposits in the Cretaceous rocks between Juncos and Humacao in eastern Puerto Rico.



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# LATIN AMERICA

## ARGENTINA

Area . . . . . 1,078,769 square miles

Capital . . . . . Buenos Aires

Chief Mineral Products—Lead, zinc, beryl, tungsten.

Currency Unit . . . . . Peso

Value . . . . . \$0.0724

According to a recent report, the iron ore deposits of Sierra Grande (Gobernación de Río Negro) are among the most important in South America, and have reserves comparable with those of Cerro Bolívar in Venezuela. Mineral reserves are estimated at some 85,000,000 tons, with a metal content of 47,000,000 tons. There are two other important iron ore deposits in the Argentine—Zapla and Puesto Viejo—but the geographical location and the quality and quantity of mineral in the Sierra Grande deposit make it the most important in the country. The total metallic content estimated for these three deposits is 91,000,000 tons, of which 51 percent comes from Sierra Grande. The amount invested by the Federal Government in geological and mining surveys, highways, labor camps, mining works, etc., exceeds \$1,000,000, and the investment of \$10,000,000 is planned for the period 1952 to 1958.

There has been an appreciable increase (110 percent) in loans which the Federal Government grants to the mining producers of the country, through the Banco Industrial. These credits have favored numerous miners who specialize in the development of asbestos, copper, gold, and lead deposits.

The Federal Government has also given financial and technical aid for various other mining activities, among which

are survey projects in Loncopué (Gobernación de Neuquén) and Castro (Gobernación del Chubut) which have brought to light important reserves of lead, zinc, silver, gold and copper, and the installation of a 50-ton-per-day plant for the treatment of auriferous and complex minerals. This is situated in the auriferous basin of Andacollo (Gobernación del Neuquén) which extends over an area of 220 square kilometers, and in one of whose mines 20,000 tons of auriferous mineral a year have been processed.

With the installation of a new flotation mill, the Electroquímica Mendocina, a copper mining company in Mendoza, has succeeded in reaching a production figure of 4 tons per day.

Production of zinc continues on an intensive scale in the three plants at Zárate (Buenos Aires), Río Tercero (Córdoba) and Comodoro Rivadavia. The latter is owned by the Aguilar Co. At the present time, annual production of  $OZn$  (oxide of zinc) exceeds 100,000 tons, which is used in various paint and rubber products factories throughout the country.

As a consequence of the readjustment of prices (per kilo of  $U_3O_8$  content) fixed by the National Atomic Energy Committee, further stimulus has been given to the search for, and exploitation of, uranium-bearing minerals by the small mining entities interested in them.

There were notable differences in the production among the various individual mines. Tin production from the Catavi (operated by Patino Mines and Enterprises Consolidated before its nationalization) was much lower; its decrease was compensated for by production from other mines.

The small nonferrous metal mines were paid only a small part of the value of their ore production which they are required to sell to the bank.

Investigations were under way to determine whether various tin and wolframite placers were commercially worth developing.

## BRITISH GUIANA

Area . . . . . 83,000 square miles

Capital . . . . . Georgetown

Currency Unit . . . British West Indies Dollar

Value . . . . . \$0.58

Chief Mineral Products—Bauxite, gold, diamonds.

Bauxite accounts for almost 90 percent of the value of the Colony's mining output. A total of 2,309,919 tons were mined as follows:

Demerara Bauxite Co.

Ltd. . . . . 2,113,990 tons

Reynolds Metals Co. . . . . 145,289 tons

Pln. Bauxite Co. Ltd. . . . . 50,640 tons

This amount is more than the 1953 output of 2,274,583 tons by 35,356 tons.

Total gold production for the year was 26,938 bullion ounces, an increase of 5,972 ounces over the 1953 production of 20,906 ounces. The increase was due principally to an increase in production by the British Guiana Consolidated Goldfields Ltd. who recovered 22,294 bullion ounces (16,375 bullion ounces in 1953) from dredging operations in the Mahdia and Potaro Rivers. The third dredge on the Konawaruk and the hydro-electric project at Tumatumari were still under construction at the end of the year.

Diamond production amounted to 30,073 metric carats; that is, nearly 5,230 metric carats less than for 1953. Royalty collected was \$14,641.00. The best yielding field, the Mazaruni District, produced 147,979 stones weighing 18,575 metric carats. About 2,150 persons were engaged in surface washing and prospecting operations. A small quantity of diamonds were cut and polished in the Colony.

During 1954, prospecting by African Manganese Company Ltd. of the lands held by Barima Gold Mining Company (Canada) Ltd. disclosed a commercially workable deposit of manganese ore at Matthew's Ridge between the Barima and Barama Rivers. Exclusive permission titles covering the entire area and held by the Barima Gold Mining Company (Canada) Ltd. were transferred to a new company called North West Guiana Mining Co. Ltd. which applied for and was granted a mining lease over the proved area.

During the year, Morabisi Mining Company concentrated efforts on the erection of its power house and recovery plant.

## BOLIVIA

Area . . . . . 416,040 square miles

Capital . . . . . La Paz

Chief Mineral Products—Tin, tungsten, lead, silver, zinc, antimony.

Currency Unit . . . . . Boliviano

Value . . . . . \$0.0055

Bolivian mineral production in 1954 took a downward trend, both in volume and in value, seriously affecting the economy of the country.

Compared with 1953, exports of tin ore decreased by about 18 percent, antimony 14 percent, zinc 23 percent, copper 16 percent, and silver 18 percent. Lead ore exports dropped 29 percent but were partly offset by a larger export of lead bars—11 percent. Only wolframite was up—11 percent. Bolivia can still ex-

port wolframite to the United States under a most favorable contract that runs until 1956.

The export of minerals produced by mines under the control of Banco Minero decreased considerably and indicated an alarming trend. Tin ore production of the Corporación Minera was practically the same as in 1953, but the production of all other minerals was down, except for wolframite and antimony.

Exports of Bolivian Minerals and Metals in Kilograms for 1953, and 1954

Commodity	1955	1954 <sup>1</sup>	Difference in Kilograms	Percent Difference
Tin conc.	35,194,366	28,792,196	-6,401,970	-18.19
Tin metal	127,231	216,905	39,674	22.39
Lead conc.	23,077,627	16,437,184	-6,640,443	-28.77
Lead metal	687,491	1,474,649	787,158	11.45
Tungsten conc.	2,295,296	2,547,127	251,831	10.97
Antimony	5,760,645	4,963,341	-797,104	-13.84
Zinc conc.	23,971,447	18,282,183	-5,689,264	-23.73
Copper conc.	4,463,262	3,752,017	-711,245	-15.94
Silver	190,109	155,821	-34,288	-18.03
Silver	21	0	-21	-100.00
Gold	32	25	-7	-21.88
Sulphur	2,497,450	2,605,090	107,640	43.10
Asbestos	705,006	32,724	-672,282	-95.36
Bismuth	62,928	49,443	-13,485	-21.43
Fluorspar	18,561	161,846	143,285	77.20
Cadmium	0	1,202	1,202	100.00
Nickel	0	1,522	1,522	100.00

1. December figures are estimates.



## Latin America

### BRAZIL

Area ..... 3,286,170 square miles  
 Capital ..... Rio de Janeiro  
 Currency Unit ..... Cruzeiro  
 Value ..... \$0.0120  
 Chief Mineral Products—Iron, manganese, bauxite, tantalite, beryl, quartz mica, scheelite, ilmenite.

Developments have been taking place in Brazil to increase its output of steel. At present, Brazil with her well-known Volta Redonda plant produces about 800,000 metric tons of steel annually. It is estimated that by 1960 the country will need at least 3,000,000 tons a year. Consequently, plans are being made to construct new steel mills. One new plant will be that of the Companhia Siderúrgica Paulista (Cosipa) at Piassaguera, in the state of São Paulo, with an initial capacity of 250,000 tons annually. Another plant now under study is planned for Laguna in the state of Santa Catarina.

The year of 1954 saw the beginning of a project to stimulate the discovery of new deposits of uranium-bearing minerals. This was organized by the Conselho Nacional de Pesquisas and is being carried out by Brazilian and United States geologists. Several areas have been carefully examined. One of them, perhaps the principal one, is located in the states of São Paulo and Minas Gerais (Pocos de Caldas district), where uranium compounds are found with zirconium oxides and silicates in rocks of the syenite group. A plant for treating this complex uranium ore may be constructed at Pocos de Caldas. Other areas of interest are: São João del Rey, and Araxá in the state of Minas Gerais; Florânia in the state of Rio Grande do Norte; and the state of Bahia.

In the northern part of the country, the Departamento Nacional da Produção Mineral has been conducting work to help the mining companies increase their production of scheelite. The scheelite mineralized area in the states of Rio Grande do Norte and Paraíba is large and it is hoped that several new mines will be opened up in the near future.

Last year saw the first production of uranium and thorium oxides from the chemical plant, Orquima, at São Paulo. The plant is being operated under the supervision of the Brazilian government.

### COLOMBIA

Area ..... 439,997 square miles  
 Capital ..... Bogotá  
 Currency Unit ..... Peso  
 Value ..... \$0.4020  
 Chief Mineral Products—Gold, platinum.

Reported gold production for the year 1954 dropped 14 percent as compared to that of the previous year. Since Colombia now has a free gold market, some of the small producers might not have reported their total production to avoid payment of the gold production tax (50¢ U.S./oz.), which could account for part of the re-

ported production drop. Interest in gold mining dropped to an all-time low. No new gold mines were opened, while several small operations were shut down. Three foreign companies accounted for 81 percent of the total production, namely: Pato Consolidated Gold Dredging, Limited—50 percent; Compañía Minera del Chocó Pacífico with its affiliates—13 percent; and Frontino Gold Mines, Limited—18 percent.

Under the Colombian free gold market, U. S. dollars received from sales of gold abroad are not subject to exchange control regulations and thus are sold on the open market at a premium over and above the official price of 2.50 pesos per U. S. dollar. At the beginning of the year these "gold" dollars were selling at around 3.00 pesos per dollar, but as coffee prices soared making more dollars available to the Colombian economy, the free gold dollar dropped inversely to a low of 2.60 pesos per dollar, in June. By the end of the year, as coffee prices returned to a more normal level, the gold dollar had more than recuperated its losses and was selling at 3.45 pesos per dollar. At date of this writing, the gold

dollar is quoted at 3.72 pesos per dollar. Prior to the year 1946, gold producers received approximately 1.70 pesos per U. S. dollar of gold produced; therefore, it can be stated that in terms of Colombian pesos, gold price has been more than doubled since the year 1946. Since peso production costs have approximately tripled since the year 1946, it must be noted that the gold producer in Colombia has fared much better than gold producers in other countries.

The year's major happening in mining circles was the change of hands in control of the country's largest gold and platinum producers. In July, a financial group, headed by Mr. Louis B. Harder of New York City, acquired control of South American Gold and Platinum Company, which is the parent company of Compañía Minera del Chocó Pacífico and of Compañía Minera de Nariño. Later in the year, South American Gold and Platinum Company acquired control of Pato Consolidated Gold Dredging Limited, when it purchased 35 percent of Pato's shares, thus bringing approximately two-thirds of Colombia's gold production under the same control.

#### Comparisons of Gold and Silver Production in Colombia in 1951, 1952, 1953, and 1954

Item	1951	1952	1953	1954
Total production pure gold in ounces	446,314	424,240	437,200	377,062
Total production pure silver in ounces	129,100	123,050	117,150	111,801
Percent produced by foreign companies	76	77	83	84.5
Percent produced by Colombian companies	24	23	17	15.5

### CHILE

Area ..... 285,153 square miles  
 Capital ..... Santiago  
 Currency Unit ..... Peso  
 Value ..... \$0.005  
 Chief Mineral Products—Copper, sodium nitrate, iron, gold.

The copper industry saw few changes in 1954. The large producers cut down inventories and production during the first half of the year, and, generally speaking, production from the three largest properties—Chuquibambilla and Potrerillos of Anaconda Copper Mining Company and El Teniente of Kennecott Copper Corporation—increased during the second half of 1954 as a result of the improvement of the world copper market. However, copper production for the year dropped about five percent with

a total output of 330,000 metric tons of finished product, as compared with 348,992 tons in the previous year.

There were very few shut downs during the year but the thing that held down copper production and will continue to do so is the existing government control. The Chilean Government continues to act as the sole selling agency for the copper produced and to reimburse the producers at \$0.23 U.S. per pound keeping everything over and above that figure. Thus the producers have no oppor-

#### Copper Production in Chile by the Anaconda Copper Mining Company and Kennecott Copper Corporation Mines in Metric Tons from January 1, 1954 to December 31, 1954, and Total Production for 1952, 1953, and 1954

1954 Month	Anaconda		Kennecott		Total
	Chuquibambilla Electro	Blister	Potrerillos Blister	El Teniente Fire Ref. Blister	
January	7,500	6,100	3,000	9,086	25,686
February	8,600	5,600	3,400	8,557	26,554
March	5,000	5,300	3,000	7,280	20,580
April	5,500	5,000	2,900	2,332	18,471
May	7,600	6,900	2,800	916	23,853
June	9,000	6,300	3,300	4,597	25,715
July	8,500	5,300	3,600	9,448	27,842
August	12,000	6,300	3,500	4,889	27,227
September	13,500	5,300	500	544	20,211
October	13,000	7,500	3,900	6,070	35,441
November	11,700	8,200	4,100	5,184	36,008
December*	10,800	9,800	3,600	8,700	36,700
1954	110,700	77,800	37,600	67,603	324,652
1953	88,838	69,158	41,473	122,926	322,684
1952	151,151	8,019	46,846	167,840	373,856

\* Estimated.

## Latin America

tunity to benefit from a rising market. The producers are not allowed to take either the free or official rate of exchange for the dollars they return to meet peso expenses in Chile but must return a certain portion of their dollars at an exchange rate of 19.37 pesos. In 1954 the free rate of exchange went from 235 pesos to as high as 350 pesos closing around 305 pesos at the end of the year. The official rate went from 110 pesos to the dollar to 200 in November. The large copper companies are still waiting for the Chilean Government to pass the copper law which will allow them to sell their copper on the world market and establish their exchange at the official rate. Under this law taxes on profits will be

in the neighborhood of 80 percent but there will be the possibility of decreasing taxes with an increased production.

The Paipote Smelter built by the government near the town of Copiapó in northern Chile produced blister at a steady rate of 1250 metric tons per month. This blister is refined at the Norddeutsche Affinerie in Hamburg and sold in Western Germany. The smelter is supplied with copper ores and concentrates from literally hundreds of small mines and mills from Northern and Central Chile.

Cia. Minera Tamaya is opening up the old workings of the famous Tamaya copper camp which in the 19th century was the richest copper deposit in Chile. The

fillings and the low-grade blocks of sulphide will be trucked 40 miles to be concentrated by flotation in the company's 600 tons a day mill at Punitaqui.

There was little done in exploration for copper in 1954 over and above the diamond drilling that is constantly being conducted at the large properties to prove reserves. Ventures Limited of Canada is said to have had a crew of geologists in Northern Chile looking over the Sagasca property in the Province of Tarapaca. Anaconda is said to have found something worth a little more inspection in connection with their diamond drilling at Indio Muerto in the Province of Atacama.

Iron ore production in Chile dropped about 25 percent from 2,903,435 metric tons in 1953 to around 2,200,000 tons in 1954. This is due primarily to the fact that there has been one large producer, Bethlehem's El Tofo property in the Province of Coquimbo, which will be worked out late in 1955. It is to be replaced by the Romeral property which is estimated to contain some 22,000,000 odd metric tons of high-grade ore. Ore from Romeral will be sent by rail to the port of Guayacán where Bethlehem has built a new modern wharf to ship the 60 percent hematite ore to the United States and to Chile's Huachipato steel mill near Talcahuano.

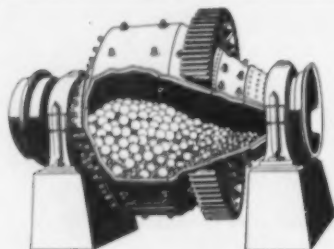
Chilean nitrate production has increased about 11.3 percent, going from a production of 1,420,243 metric tons in 1953 to 1,580,615 tons in the past year. The average production should be in the neighborhood of 1,600,000 tons and any decrease can usually be attributed to strikes, work stoppages, etc. The chief nitrate producers are the Anglo Lautaro Nitrate Company with "oficinas" at Maria Elena and Pedro Valdivia in the Province of Antofagasta and the Cia. Salitrera Tarapaca y Antofagasta with "oficinas" in the Iquique area of the Province of Tarapaca.

The government has decided to reorganize the nitrate industry, its taxation system, and the agency which controls the industry on behalf of the government.

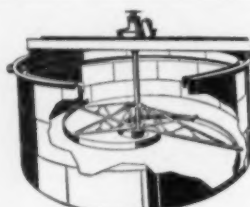
In addition to the above mentioned mineral production, Chile has taken great strides in the production of cement, dolomite, salt, sulfur, calcium sulfate, quartz, manganese, mercury, molybdenum, lead, and zinc. Unfortunately there are no production figures for 1953 and 1954 available for these items. One point of interest is that 1954 saw the first production of pig lead in Chile. This was produced by the Cia. Minera Aysen which has a lead property next to the Argentine border in the Province of Chiloé. Cia. Minera Aysen, is building another Scotch hearth to be able to smelt the whole of the 72 percent lead concentrate produced by its mill. The pig lead, after refining, will be sold within the country.

The Development Corporation (Corporación de Fomento) is building a 35 tons contact sulphuric acid plant at the port of Antofagasta to supply small local plants with  $H_2SO_4$  for leaching oxide copper ores. A large number of these small plants have been built in this province to treat the low-grade ores which are very plentiful. The plant has been supplied by Lurgi Gesellschaft für Chemie und Hütten Wesen m.b.H., Frankfurt am Main.

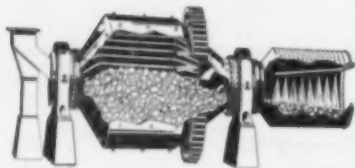
In November 1954 the Mining Bank inaugurated a new cyanidation-flotation



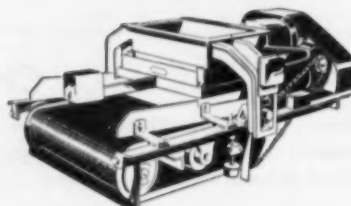
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## Latin America

mill at the town of Illapel, Coquimbo Province, to treat gold ores by cyanidation and copper or lead ores by flotation. The mill has a total capacity of 100 metric tons of ore per day, of which total 50 tons can be handled in the cyanidation section and 50 tons in the flotation section.

## ECUADOR

**Area** ..... 175,830 square miles  
**Capital** ..... Quito  
**Currency Unit** ..... Sucre  
**Value** ..... \$0.066  
**Chief Mineral Products**—Gold, silver, sulphur.

The "Compañia Industrial Minera Asociada" (CIMA) at Portovelo reduced its mine production during 1954 due to approaching exhaustion of the ore body. CIMA is planning to mine at "Minas Nueva" and "Lighsu," new concessions granted to them by the government that contain gold-bearing veins and placers.

The Ecuadorian Mining Corporation S.A. which is working the sulphur mines of "Tixan," decreased production during 1954 and devoted efforts to enlarging the refinery operations by adding flotation units. This has increased the refinery capacity to 25 metric tons per day of 99.5 percent pure sulphur.

The "Sociedad Aurifera Nacional" which has gold mines and washing plants in the province of Cotopaxi had some of its mines closed during 1954 due to heavy inflows of water. The company is presently planning to finance new mines in this area farther away from the creeks at Cotopaxi which become torrents in the winter.

### Mine Production of the "Compañia Industrial Minera Asociada" (CIMA) at Portovelo, Ecuador During 1953 and 1954.

Metal	1953	1954
Gold <sup>1</sup>	23,131	15,137
Silver <sup>1</sup>	86,750	32,670
Lead <sup>2</sup>	251,038	218
Copper <sup>2</sup>	3,016	1,876

1. Fine ounces. 2. Pounds.

## FRENCH GUIANA

**Area** ..... 35,135 square miles  
**Capital** ..... Cayenne  
**Currency Unit** ..... Franc  
**Value** ..... \$0.0029  
**Chief Mineral Product**—Gold.

Surveys of bauxite deposits in the Kaw Mountain have been completed, but are continuing in the region of Fourgassie. It is estimated that the reserves reach the figure of some 40,000,000 tons. The problems of mining the deposit are being studied.

In an area of some 600 square kilometers, which extends over the region of the Chevaux Mountains and the upper basin of the Crique Boulanger, and where there are numerous indications of iron

mineralization, surveys have demonstrated the existence of high-quality ores.

About 10 tons of columbite-tantalite were shipped to the United States in 1954, coming from small workings in lower Sinnamary (Crique Venus). The first shipments of this ore had been made in 1953. Ore content is 53.44 percent  $Ta_2O_5$  and 27.61 percent  $Cb_2O_5$ . Traces of these elements have been discovered in many places, notably in the basin of the Riviere des Cascades.

Prospecting for auriferous rock and alluvial gold has been intensified under the direction of an official organization, the Bureau Minier Guyanais in the Moyenne Mana region, and also by the Société

Saint Elie et Adieu Vat and the Société d'Exploitations Minières de l'Inini.

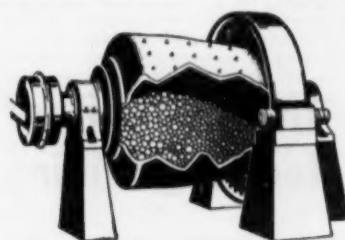
## MEXICO

**Area** ..... 760,383 square miles  
**Capital** ..... Mexico City  
**Currency Unit** ..... Peso  
**Value** ..... \$0.0805  
**Chief Mineral Products**—Silver, lead, zinc, antimony, copper, graphite, iron, fluorspar, mercury

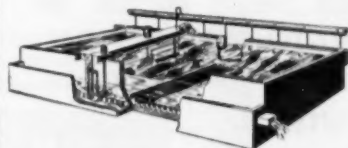
Interest in Mexican mining centered on the huge rutile deposit of the Republic



"AUTO-RAISE" THICKENERS  
(Center-column type)



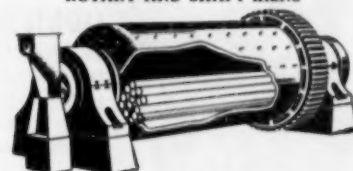
TRICONE MILLS



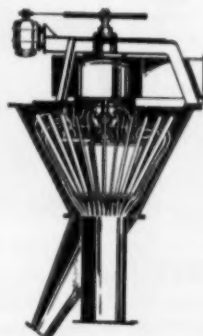
AUTOMATIC BACKWASH  
SAND FILTERS



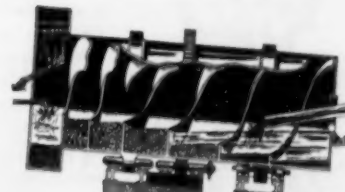
RUGGLES-COLES  
ROTARY AND SHAFT KILNS



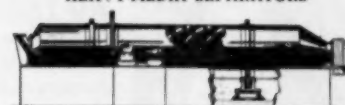
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Steel Corporation. This titanium deposit, reported to be the richest in the Western Hemisphere, is located in the province of Oaxaca, about 30 miles from Port Angelo on the Pacific Coast. Proven reserves are said to total more than 25,000,000 tons of rutile. Republic has ordered equipment for a plant, which will have an initial capacity of 2,000 tons of 95 percent titanium dioxide per month, to be constructed at the mine site. Completion of the plant is expected by June 1955. Mining of the ore body will be by underground methods.

The American Smelting and Refining Company (ASARCO) completed its 400-ton lead-zinc-silver flotation mill at the Nuestra Señora property, Cosala, Sinaloa.

Operations began on a part-time basis in August. ASARCO continued exploration and development of the Rosario lead-zinc property at Rosario, Sinaloa. Plans for constructing a mill at this property were being formulated near the end of the year.

Compañía Minera Nomer S. A. carried out development work and pilot plant testing at its copper deposit near Tlapehuala, Guerrero. The copper-silver ore is first roasted, crushed, then leached with sulphuric acid and precipitated with scrap iron. Plans are being made to increase the leaching capacity to 400 tons per day. Also a rotary furnace is to be installed in addition to the present

retort furnace. Future plans call for producing copper sulphate as well as cement copper.

Compañía Minera y Beneficiadora de Sombretete, S. A. placed its new flotation mill, located in the San Martin district of Zacatecas, in operation. This plant which had an initial capacity of 200 tons per day is being increased to 400 tons. It is treating the silver-lead-copper-zinc ores of the Compañía Minera de San Martin, S. A., and also serves as a custom mill for the small mines in this area.

Fluorspar production is rapidly increasing in Mexico. A number of shallow high-grade deposits have been found in Northern Coahuila, the La Píala area, and in the San Luis Potosi district. Mills for acid-grade treatment of fluorspar ores have been constructed by Adolpho Romo, in Musquiz and ASARCO in Agujita, Coahuila.

Cia. Minera la Trinidad S. A. has organized a company which will construct and operate a manganese concentration plant at Nombre de Dios, Chihuahua. The plant is to have a capacity of 1,000 tons per day producing a 40 percent Mn concentrate. It will serve as a custom mill for small-scale mine operators who have had difficulty in marketing their low-grade ore.

Production of the first commercial sulphur on the Pacific Coast began in April when the Texas International Sulphur Company's plant at San Felipe, Baja California, went into operation. The San Felipe plant produces crude commercial sulphur from surface ore at a rate of 700 tons per month using an autoclave process.

### Mine Production of Metals in Metric Tons in Mexico 1952, 1953 and 1954

Metal	1952	1953	1954
Gold	14,289	15,037	12,303
Silver	1,566,717	1,489,435	1,247,207
Copper	58,463	60,148	52,006
Lead	246,027	221,548	211,681
Zinc	227,375	226,338	198,106
Iron	336,838	331,175	305,448
Manganese	45,002	75,738	79,561
Antimony	5,531	3,686	3,880
Mercury	301	401	506
Graphite	24,153	30,331	20,435
Tungsten	287	408	431
Arsenic	2,865	1,998	2,722

## PERU

Area . . . . . 514,059 square miles

Capital . . . . . Lima

Currency Unit . . . . . Sol

Value . . . . . \$0.0525

Chief Mineral Products—Zinc, lead, silver, copper, bismuth, vanadium, iron, tungsten, gold.

Although no important new mines were discovered or placed in operation during the year, the mineral production of Peru in 1954 surpassed that of 1953 by about 10 percent in tonnage and 15 percent in dollar value.

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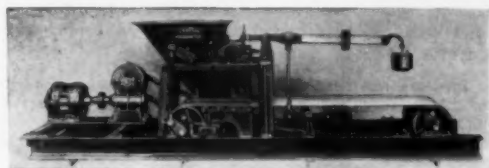
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18 to 24° hardness

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CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

## NOW The MOST REVOLUTIONARY IMPROVEMENT in URANIUM DETECTION



### The NEW NCA MULTIPLIER TUBES

Sensitivities of more than 500,000 cpm/mr/hr\* are available in a single tube. Several tubes can be ganged easily to obtain proportionately higher sensitivities. Sensitivity of NCA Multiplier Tubes is highest for low energy gamma rays, so that they are far superior to scintillation counters for detecting more deeply buried deposits. This, plus the Tube's fast response, makes it ideal for aerial and automobile surveys.

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#### Leads You Directly to Ore Deposits

Because of their directional characteristics, NCA Multiplier Tubes can function as a radiation compass, indicating the direction of radioactive deposits, and making them more easily and quickly located.

#### SPECIFICATIONS

MODEL NUMBER	B6A	B6B	B6C
Sensitivity cpm/mr/hr	70,000	200,000	500,000
Operating Voltage	900V	900V	900V
Dimensions	2-1/16 x 6 1/4"	2-1/16 x 12 1/2"	3-1/16 x 12 1/2"

\*Always check claims for high sensitivity. They are meaningless unless expressed as cpm (or cps)/mr/hr.



### SUPER-SENSITIVE Ore-Lokator Model RM2N

One of the most popular high quality Geiger Counters on the market today—used by professional and serious amateur prospectors.

**SENSITIVITY:** Normally supplied with super-sensitive, thin walled, plug-in type NCA geiger tube in probe which detects and measures the intensity of hard beta and/or gamma radiation as low as .02 mr/hr. (equivalent to .003% uranium). When used with one of the above described NCA Multiplier Tubes its sensitivity can be increased from 50 to 500 times.

**HAS EASY READING METER** with large 2½" scale face.

**RANGES:** 500 — 5,000 — 50,000 cpm. Calibrated to read radiation dosage from 0.025-2.525 mr/hr. Simple method is described for accurately determining percent uranium from cpm and meter reading of radiation dosage.

**SINGLE SWITCH** — On-Off, Meter Ranges, Geiger Tube Voltage.

**BATTERIES REQUIRED:** 2 — 67.5V, 3 — 1.5V flashlight cells.

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**Nucleonic Company of America**  
196 DeGraw Street, Brooklyn 31, N. Y.

[World Mining Section—73]

## Latin America

Steel Corporation. This titanium deposit, reported to be the richest in the Western Hemisphere, is located in the province of Oaxaca, about 30 miles from Port Angelo on the Pacific Coast. Proven reserves are said to total more than 25,000,000 tons of rutile. Republic has ordered equipment for a plant, which will have an initial capacity of 2,000 tons of 95 percent titanium dioxide per month, to be constructed at the mine site. Completion of the plant is expected by June 1955. Mining of the ore body will be by underground methods.

The American Smelting and Refining Company (ASARCO) completed its 400-ton lead-zinc-silver flotation mill at the Nuestra Señora property, Cosala, Sinaloa.

Operations began on a part-time basis in August. ASARCO continued exploration and development of the Rosario lead-zinc property at Rosario, Sinaloa. Plans for constructing a mill at this property were being formulated near the end of the year.

Compañía Minera Nomer S. A. carried out development work and pilot plant testing at its copper deposit near Tlapachuala, Guerrero. The copper-silver ore is first roasted, crushed, then leached with sulphuric acid and precipitated with scrap iron. Plans are being made to increase the leaching capacity to 400 tons per day. Also a rotary furnace is to be installed in addition to the present

retort furnace. Future plans call for producing copper sulphate as well as cement copper.

Compañía Minera y Beneficiadora de Somberrere, S. A. placed its new flotation mill, located in the San Martin district of Zacatecas, in operation. This plant which had an initial capacity of 200 tons per day is being increased to 400 tons. It is treating the silver-lead-copper-zinc ores of the Compañía Minera de San Martin, S. A., and also serves as a custom mill for the small mines in this area.

Fluorspar production is rapidly increasing in Mexico. A number of shallow high-grade deposits have been found in Northern Coahuila, the La Pila area, and in the San Luis Potosi district. Mills for acid-grade treatment of fluorspar ores have been constructed by Adolpho Romo, in Musquiz and ASARCO in Aguijita, Coahuila.

Cia. Minera la Trinidad S. A. has organized a company which will construct and operate a manganese concentration plant at Nombre de Dios, Chihuahua. The plant is to have a capacity of 1,000 tons per day producing a 40 percent Mn concentrate. It will serve as a custom mill for small-scale mine operators who have had difficulty in marketing their low-grade ore.

Production of the first commercial sulphur on the Pacific Coast began in April when the Texas International Sulphur Company's plant at San Felipe, Baja California, went into operation. The San Felipe plant produces crude commercial sulphur from surface ore at a rate of 700 tons per month using an autoclave process.

### Mine Production of Metals in Metric Tons in Mexico 1952, 1953 and 1954

Metal	1952	1953	1954
Gold	14,289	15,037	12,303
Silver	1,566,717	1,489,435	1,247,207
Copper	58,463	60,148	52,006
Lead	246,037	221,548	211,681
Zinc	227,375	226,538	198,106
Iron	336,838	331,175	305,448
Manganese	45,002	75,738	79,561
Antimony	5,531	3,686	3,880
Mercury	301	401	506
Graphite	24,153	30,331	20,435
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[World Mining Section—73]

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## Latin America

Corporation for the financing of the Toquepala copper project in southern Peru. A new company would be formed, called Southern Peru Copper Corporation, to develop the Toquepala property, together with the Quellaveco property of ASARCO and the Cuajone property owned by Cerro de Pasco and Newmont.

In spite of a continuing search for new deposits by a number of companies, including Kennecott Copper Corporation, Cerro de Pasco Corporation, Consolidated Guayana Mines (Ventures Ltd.), Mauricio Hochschild, and American Smelting and Refining Company, no important new discoveries were confirmed in 1954.

Cerro de Pasco's Oroya copper smelter output for the year was the highest since 1943, and that from the refinery the highest ever. The electrolytic zinc plant made an excellent record and averaged 97 percent of designed capacity in spite of considerable lost time due to power failures.

During the early part of 1954, the productive capacity of Marcona Mining Company (a joint operation of Utah Con-

struction Company and Cyprus Mines Corporation) was satisfactorily approaching its goal of 10,000 tons per day of 60 percent iron Bessemer ore. However, curtailment of steel production in the United States caused a limiting of Marcona daily output to about 6,000 tons.

Unofficial sources reported that during the year the exploration of Republic Steel Corporation's Acari iron ore deposit in southern Peru was proving it to be disappointingly small.

Since much of Peru's zinc ores are of sphalerite with high iron content, or are even of marmatite, the local mining groups watched with keen interest the outcome of Cerro de Pasco's efforts to perfect its modified Sterling thermal zinc treatment process which may permit the handling of marmatitic concentrates. The results have not been too satisfactory but it is still believed that the difficulties can be overcome and that the process can be made practical and economic.

In spite of newspaper reports, there was no actual confirmation of any commercial uranium deposit in Peru.

Surinam Bauxite Company, Ltd., Billiton Company of Surinam, Ltd., Guiana Exploration Company, Ltd. (Kennecott Copper Corporation), and Reynolds Surinam Mining Company, Ltd. continued drilling for bauxite in several areas scattered all over the coastal sedimentary region. Recent evidence, for instance the discovery by Surinam Bauxite Company of buried deposits in the Paranam area, seems to justify a patient search for hidden ore bodies. However, after drilling since 1953, Guiana Exploration Company suspended exploration in the end of 1954.

Gold mining, still of minor importance, seemed to pass through a difficult period.

Shipments totaled 6,780 ounces compared with 6,450 ounces in 1953. Sara Creek Goldfields, Ltd. shipped 3,270 ounces. Output of Surinam Gold Mining Company, Ltd. from its 20-ton mill amounted to 1,030 ounces. A new company, Surinam Developing & Mining Company, Ltd., started re-evaluation of various old prospects.

African Manganese Company of London, Ltd., in close cooperation with Union Carbide & Carbon Corporation, extended its search for manganese into vast areas in the interior.

A private group, backed by Bethlehem Steel Company, prospected for lateritic iron ore near the Saramacca River but analyses of only 40 percent iron did not make it worth further development. In the end of the year 9 short tons of beryl (11.7 percent BeO) had been exported to the United States. The beryl had been produced from the Rama pegmatite on the Surinam River.

## SURINAM

Area ..... 55,144 square miles

Capital ..... Paramaribo

Chief Mineral Products—Bauxite, gold.

Currency Unit ... Surinam Guilder

Value ..... \$0.531

Again bauxite exports set an all-time record at 3,421,000 metric tons valued at \$23,400,000 against 3,276,500 metric tons valued at \$21,300,000 in 1953. The outlook for 1955 however may be somewhat less optimistic.

Moengo mine of Surinam Bauxite Company, Ltd. (Alcoa) exported 1,805,000 metric tons of metal grade bauxite. Owing to full-year operation of its new drying and calcining plant, consisting of four dual-purpose kilns, exports of calcined bauxite amounted to 129,500 metric tons, which is substantially more than in 1953. Exports of chemical bauxite amounted to 60,000 metric tons. Total exports reached 1,994,500 metric tons, 47,000 metric tons more than in 1953.

At Paranam mine, also owned by Surinam Bauxite Company, all mining activities have been shifted towards the Rorac Hill and Truly Hill deposits on the east

bank of the Surinam River. Exports totaled 781,000 metric tons, metal grade only, which is 199,500 metric tons more than in 1953.

Exports by Billiton Company of Surinam, Ltd. from its Onverdacht mine amounted to 645,500 metric tons, mostly metal grade ore and some chemical bauxite. This is 102,000 metric tons less than in 1953.

Surinam Bauxite Company did further drilling on the bauxite hills in the eastern part of its Moengo concession. In the Paranam area on the west bank of the Surinam River, subsurface deposits, under some 40 feet of overburden, were outlined by a regular drilling program. The company started dredging to shift the Para Creek which streams over one of the ore bodies. Research was started on the treating of low-grade (ferruginous) bauxite.

## VENEZUELA

Area ..... 352,150 square miles

Capital ..... Caracas

Currency Unit ..... Bolivar

Value ..... \$0.3003

Chief Mineral Products—Iron, gold, diamonds.

Iron ore exports increased during 1954, with the rise attributed to the start of export operations by Orinoco Mining Company in January. (Orinoco is a subsidiary of United States Steel Corporation.) The remainder came from the Iron Mines of Venezuela, a subsidiary of Bethlehem Steel Company.

Exploration work continued at the Maria Luisa iron-bearing property of M. A. Hanna Company and Republic Steel Corporation, and at the Trueno deposits, but no development work was undertaken.

Manganese outcrops discovered in the Piar district of the state of Bolivar were the object of intensive study but no results have been revealed.

Compania Anonima Minas de Amianto de Tinaquillo was buying up properties around its asbestos plant with the idea of unifying and enlarging its production.

Exploration for bauxite deposits continued during the year. Near the town of Upata, state of Bolivar, the existence of about 3,700,000 metric tons was disclosed.

Some indications of radioactive minerals were located in the areas of Barquisimeto and Carora in the state of Lara, and a small zone in the state of Bolivar.

Bauxite and Gold Exports from Surinam in 1952, 1953 and 1954

Company	Mine	Grade	1952	1953	1954
B A U X I T E <sup>1</sup>					
Surinam Bauxite Company Ltd. (Alcoa)	Moengo	Metal	1,645,000	1,864,000	1,805,000
		Chemical	42,500	45,500	60,000
		Calcined	—	38,000	129,500
	Total	1,687,500	1,947,500	1,994,500	
	Paranam	Metal	551,500		
Chemical		36,000	(3)	(3)	
	Total	587,500	36,000	36,000	
Billiton Company of Surinam, Ltd.	Onverdacht	Metal <sup>2</sup>	551,500	(3)	(3)
		Chemical	36,000	—	—
		Total	587,500	36,000	36,000
	Total	3,155,000	3,276,500	3,421,000	
	G O L D <sup>3</sup>				
Sara Creek Goldfields, Ltd.			3,335	3,708	3,270
Surinam Gold Mining Company, Ltd.			202	374	1,030
White Water Mines, Ltd.			431	304	390
Others			2,162	2,064	2,090
Total			6,130	6,450	6,780

1. Metric tons.

2. Including small lots of calcined bauxite.

3. Not specified.

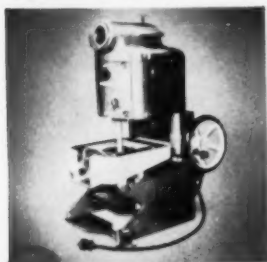
4. Troy ounces.



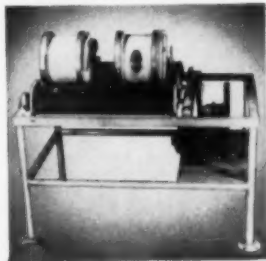
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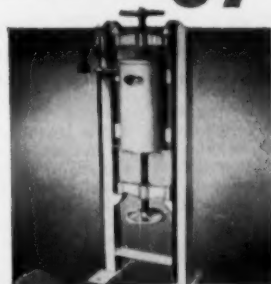
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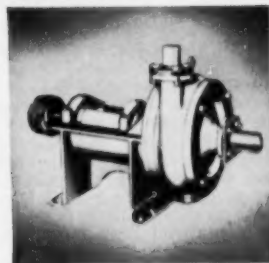
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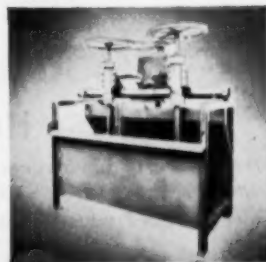
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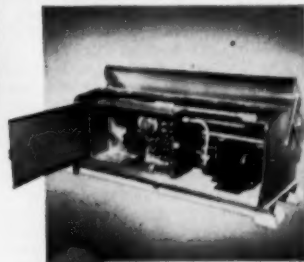
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PRESSURE FILTER



**6** VACSEAL PUMP



**7** AGITAIR  
FLOTATION MACHINE



**8** GEARY-JENNINGS  
SAMPLER

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PLANT DESIGN • GEOLOGIC INVESTIGATION



# ASIA

## BURMA

Area ..... 261,789 square miles

Capital ..... Rangoon

Chief Mineral Products—Wolframite, tin, lead, zinc.

During the past year there was no definite improvement in lawlessness in the Tenasserim Division and consequently the mining industry showed a decline compared with the previous year. Until the government can take steps to organize and afford protection to the mining industry this decline will continue.

In December 1954, the government had decided to impose a royalty of 5 percent on minerals, but as the mining industry vigorously protested against this increase, the government has agreed to impose only the old royalty of 2.5 percent.

With the exception of the oil industry and Burma Corporation Mines Limited, the Burma government has not been interested in a joint venture partnership in any of the tin and wolframite mining companies during the past year. The Burma government is now sole owner and is developing the Nanmyin wolframite mine in the Mergui District.

As mentioned above, the government's only joint mining venture has been with the Burma Corporation, Ltd. Burma Corporation's lead-zinc-silver mine at Namtu in the Shan States produced 8,630.1 tons a month during the last six months of 1954, as compared with 2,676.1 tons monthly during 1953. The company is now considering the installation of a second mill.

Currency Unit ..... Kyat

Value ..... \$0.2115

The annual report for Mawchi Mines, Ltd. for the year ended March 1954 showed a loss of £34,232. The situation at the mine is more or less the same as when the property was first occupied by Burmese military forces in November 1953. Burmese troops are still at Mawchi keeping open the 94-mile road to Loikaw, over which supplies and personnel are moved to and from Rangoon. The area to the immediate south of the mine has not yet been re-occupied.

Anglo-Burma Tin Company, Ltd. maintained the year's output of tin ore at 103 tons. The company continues to work but under severe handicap because of insurgent activities and lack of qualified technicians at the mine.

### Exports of Tin and Wolframite Concentrates from the Tavoy and Mergui Districts of Burma in Long Tons for 1953 and 1954

Commodity	District	1953	1954
Tin	Mergui	866	537
Tin	Tavoy	597	776
Wolframite	Mergui	122	68
Wolframite	Tavoy	1,580	1,283
Mixed (tin and wolframite)	Mergui	70	47
Mixed (tin and wolframite)	Tavoy	381	—

## HONG KONG

Area ..... 396 square miles

Capital ..... Hong Kong

Chief Mineral Products—Lead, tungsten, iron, clay, graphite.

The most active mining in Hong Kong in 1954 was at the magnetite iron ore mine at Ma On Shan. An average of 12,000 tons was shipped each month to Japan. In October a new magnetic separator costing about HK\$2,000,000 was installed by Japanese technicians.

Development went ahead rapidly in the mining of the three-foot seam of graphite which was discovered on West Brothers Island in 1953. The mine is operated by the Tin Bo Mining Development Company. An average monthly production of 300 tons continued throughout the year. The fixed carbon content is high and varies between 80 and 90 percent.

The low price of wolframite caused the production of tungsten to slow down during the year. Approximately five tons monthly was produced throughout the

whole of the New Territories. During the second half of the year several local financiers interested themselves in many of the local companies. This was the case at Lin Fa Shan where Po On Hong Limited carried out a systematic and detailed survey covering approximately 815 acres.

The lead ore mine at Lin Ma Hang was worked sporadically in 1954. This was because the holding company, Hong Kong Mines Limited, sub-let short leases to local contractors. In all about 500 tons of high grade argentiferous galena was shipped to Belgium. Prospecting for lead ore continued and one very promising area was located just north of Tai Mo Shan and near the Lam Tsuen Valley. A company is likely to be floated soon to develop this deposit.

### Production of Metals, and Ores in Hong Kong for the Years 1948 Through 1954\*

Commodity	1948	1949	1950	1951	1952	1953	1954*
Iron ore <sup>1</sup>	908	59,181	169,374	160,684	127,512	123,200	69,800
Tungsten Conc. <sup>2</sup>	—	—	—	44,149	217,599	513,721	49,133
Tin ore <sup>2</sup>	1,811	800	1,000	2,514	1,188	156	—
Molybdenum <sup>2</sup>	—	—	—	250	737	3,327	170
Lead <sup>1</sup>	—	—	—	176	752	645	325
Graphite <sup>1</sup>	—	—	—	—	—	200	1,105
Kaolin and Clays <sup>2</sup>	3,874	—	—	620	4,381	5,934	4,706

\* For first nine months only. 1. Tons 2. Pounds.

## CEYLON

Area ..... 25,332 square miles

Capital ..... Colombo

Currency Unit ..... Rupee

Value ..... \$0.21

Chief Mineral Products—Graphite, gem stones.

Graphite mining continues to be the principal mineral industry of Ceylon. The year was again one of quiet activity, as there was no incentive to increase production. The small mines continue to work sporadically, while the large mines are on a restricted production basis. The large mines which worked continuously throughout the year have fairly large stocks of cured graphite on hand. Ceylon is capable of increasing her production considerably at short notice should conditions improve.

The principal graphite mines worked by Messrs. Bogala Graphite Ltd., H. L. de Mel & Company Ltd., and Kahatagaha Mines Company Ltd., have completed extensive replacement programs which were started a few years previously.

### Ceylon Graphite Exports 1951 thru 1954 in long tons

Year	Quantity
1954	7,755
1953	7,218
1952	7,659
1951	12,621

The quantity exported during the year (7,755 long tons) showed a slight improvement as compared with the previous year. However, the total exports in recent years are nowhere near the peak of 1942 when over 27,000 long tons were exported. The principal consumers of Ceylon graphite are the United Kingdom taking 48 percent; United States taking 23 percent; and Japan taking 14 percent of the total exports.

Ceylon produces practically all varieties of gem stones, both precious and semi-precious, except the diamond. The principal varieties are the ruby, sapphire, star-sapphire, cat's eye, zircon, topaz, and moonstone. All gem stone mining is seasonal being affected by the heavy monsoonal rains.

The small experimental electro-magnetic plant continues to treat beach sand for the recovery of monazite. The beach sand concentrates for this plant are collected from seasonal deposits which tend to form about the time of the monsoon rains on the fore shore.

## INDIA

Area .... 1,221,880 square miles

Capital ..... New Delhi

Currency Unit ..... Indian Rupee

Value ..... \$0.2115

Chief Mineral Products—Manganese, iron, gold, lead, ilmenite, zinc.

One of the big events of the year was the long-awaited decision regarding location of a \$150,000,000 steel plant. The

Central government selected Rourkela in Orissa, previously recommended by a group of experts representing the German steel combine, Krupp-Demag, which will supply technical aid for the project. The plant will have an initial capacity of 500,000 tons.

The Indian government approved the abolition of the 15 percent export duty on manganese ore as a relief measure for the industry after about 63 mines closed down during the year resulting in unemployment for 25,000 workers.

Travancore Titanium Products Ltd., the only titanium oxide producer in India, resumed production during the year after being closed down from the middle of 1952. Capacity is about 1,800 tons per year, with only about 600 tons absorbed by the local market.

Central Provinces Manganese Ore Company its new heavy media separation plant at the Dongri Buzurg manganese mine 80 miles from Nagpur in 1954. The plant is reported to be the largest of its kind in the Far East.

## JAPAN

Area ..... 147,690 square miles

Capital ..... Tokyo

Currency Unit ..... Yen

Value ..... \$0.0028

Chief Mineral Products—Copper, manganese, iron, lead, zinc, pyrite, sulphur.

Because of Japan's deflated economic condition its demand for non-ferrous metals decreased during most of 1954. In the copper industry, a large part of refinery production, approximately 9,000 metric tons, could not be sold to consumers. After July 1, 1954 copper producers lowered their selling price to 300,000 yen per metric ton; 20,000 yen below the previously existing price. However, this change in price did not substantially reflect on the copper market. By the end of August copper stocks at refineries amounted to 10,000 metric tons. During the first half of 1954 copper exports amounted to only 3,300 metric tons, but the industry began improving during the second half of the year.

Japan's production of lead, which was always short, has increased during the last several years. Large orders for cables and chemicals depleted the country's stocks during the last part of 1953 and the government began buying lead ores and scraps from other countries.

Production of zinc increased in 1954 with the construction of four new refineries and an active export business. Total production of this metal is by the five following companies: Mitsui Mining & Smelting Company; Mitsubishi Mining Company; Nihon Soda Company; Toho Aen Company; and Dowa Mining Company.

The year of 1955 will see several new developments in the production of metals. In metallurgy the high light is the application of a flash smelting process at the Ashio copper mine of Furukawa Mining Company. The Nihon Mining Company has underway an expansion plan to increase its copper milling capacity by 40,000 tons. Completion of this project will be sometime in 1956.

## Production of Metals and Ore in Japan in 1951, 1952, 1953, and 1954.

Commodity	1951	1952	1953	1954
Copper (electrolytic) <sup>2</sup>	40,866	94,385	91,065	65,176
Lead (bullion) <sup>2</sup>	11,116	19,148	23,145	22,899
Zinc (electrolytic) <sup>2</sup>	38,244	49,341	54,827	109,323
Zinc (distilled) <sup>2</sup>	18,101	20,886	23,948	—
Mercury <sup>2</sup>	80.8	111.0	220	141.8
Antimony <sup>2</sup>	221.2	543	1,197	335
Ti <sup>2</sup>	433.4	786	858	807
Pyrite (ore) <sup>2</sup>	2,162,344	2,567,053	2,296,389	—
Silver <sup>2</sup>	143,320	185,722	249,210	190,113
Gold <sup>2</sup>	176,900	209,210	233,890	233,899

1. Preliminary 2. Metric tons 3. Kilograms 4. Fine ounces

## ISRAEL

Area ..... 7,800 square miles

Capital ..... Jerusalem

Chief Mineral Products—Potash, phosphate, pyrite.

Currency Unit ..... Israeli Pound

Value ..... \$1.00

Production of phosphate from the Negev Desert increased sharply in 1954 with 60,000 tons being mined compared to 16,000 tons in 1953. Further expansion to 140,000 tons is planned for 1955.

Israel Mining Industries has reported that recent exploration has disclosed an extensive, valuable deposit of copper in the Timna Valley, north of the Red Sea port of Eilat. The copper ore occurs as a silicate and phosphate. So far proved reserves total 12,000,000 metric tons of ore which would yield 180,000 tons of copper. Preliminary estimates show that more than 3,000,000 tons of ore (45,000 tons of copper) could be mined by open-pit methods, since the deposit outcrops

and gently dips underground. The Israeli government has prepared plans for a sulphuric acid leaching plant, with an initial capacity of 4,000 tons a year, to treat the oxidized ore. Equipment has already been ordered from Germany under the Israel-West German Reparations Agreement. It is estimated that it will take about two years to construct the plant.

### Reported Israel Copper Reserves of the Timna Valley Deposit in Metric Tons

Reserves	Tons of Ore	Tons of Copper
Proved	12,000,000	180,000
Probable	28,000,000	420,000
Possible	60,000,000	900,000

## THE HASHEMITE KINGDOM OF JORDAN

Area ..... 46,000 square miles

Capital ..... Amman

Chief Mineral Products—Phosphate, potash, gypsum.

Currency Unit ..... Jordan Dinar

Value ..... \$2.80

Jordan phosphates occur in two main deposits near Er-Roseifa and El-Hasa. The Er-Roseifa deposit is the only one being exploited at present, but plans have been made to start developing the El-Hasa deposit. El-Roseifa proven phosphate reserves are estimated at 15,000,000 tons of 74 percent tri-calcium phosphate. The El-Hasa deposit has indicated ore totaling 7,000,000 tons of 60 to 70 percent friable phosphate and 4,000,000 tons of rock phosphate which is of a slightly lower grade.

Geologic observations indicate the existence of vast areas of possible phosphate-bearing formations and exploration

work is being continued to find additional ore bodies. In 1954 77,000 tons of phosphate were mined and exported to Italy and Japan. Production is expected to reach 200,000 tons by 1956. The Er-Roseifa deposit has been found to contain uranium in the form of carnotite.

A thorough examination to determine if it would be feasible to produce potassium chloride and other products from the brine of the Dead Sea has been completed by the Chemical Construction Corporation of New York, New York. A plant costing about 4,500,000 dinars would produce between 50,000 to 75,000 tons annually.

## REPUBLIC OF KOREA

Area ..... 36,293 square miles

Capital ..... Seoul

Chief Mineral Products—Tungsten, gold, bismuth, iron, graphite, monazite.

Currency Unit ..... Won

Value ..... \$0.0055

Rehabilitation of the Korean mining industry progressed satisfactorily during 1954. Among the accomplishments of the year were extensive monazite exploration, erection of three refineries, and comple-

tion of the mechanization program at the Sang Dong tungsten mine, in addition to maintaining of average mineral production.

## Asia

The Dae Myong Rare Metal Mining Company, headed by Chung Myung Sun, started large-scale mining of monazite in October, and plans to produce 200 tons of 50 to 60 percent monazite a month, because investigation and trial operation last December proved successful.

The planned mill projects have been completed. Two gold milling plants have been erected—one at the Ku-Bong mine of Chung-Yang, South Choong-Chung province, and one at the Mu-Keuk mine of Eun-Sung in North Choong-Chung province. A bismuth smelter was built at Young Dung Po, Seoul.

Both gold plants are capable of treating 6,000 metric tons of ore per month.

The Ku-Bong will have a monthly output of 40 kilograms of fine gold recovered from 7 grams per ton ore, and the Mu-Keuk will produce 20 kilograms from 8 grams ore. The Young Dung Po bismuth plant will handle 100 metric tons to produce 25 tons of 98 percent concentrate from 30 percent ore and concentrate.

Mechanization of the Sang Dong mine was completed by the Korea Tungsten Mining Company, headed by Ahn Bong Ik, with the assistance of the Utah Construction Company with which Korea had a technical assistance agreement. The modern machinery and equipment is expected to enable the plant to produce 1,000 tons of concentrate per month.

June 1952, shows successful progress with output up by more than 13,000 tons over the 1953 figure. Japanese aluminum manufacturers are buyers of all this mine's production.

The only gold mine of any consequence in Malaya is worked by the Raub Australian Gold Mining Co., Ltd. in Pahang. Despite its labor problems, production in 1954 at 20,955 fine ounces was an increase of more than 10 percent over the 1953 figure.

**Production of Minerals in Korea During 1944 (peak production during Japanese occupation) and in the Republic of Korea in 1952, 1953, and 1954**

Commodity	1944	1952	1953	1954
Gold <sup>1</sup>	330,776	18,636	16,100	52,250
Silver <sup>1</sup>	—	9,810	52,500	50,200
Copper ore <sup>2</sup>	—	14	10,144	7,047
Electrolytic copper <sup>2</sup>	2,546	366	260	—
Lead ore <sup>2</sup>	—	127	29	—
Lead bullion <sup>2</sup>	6,996	312	30	—
Zinc bullion <sup>2</sup>	6,838	279	638	382
Bismuth conc. <sup>2</sup>	—	17	299	—
Bismuth metal <sup>2</sup>	—	20,577	18,831	30,996
Iron ore <sup>2</sup>	441,941	7,416	3,270	1,582
Manganese ore <sup>2</sup>	23,979	1,060	1,126	140
Nickel ore <sup>2</sup>	6,830	3,790	7,456	3,828
Tungsten conc. <sup>2</sup>	2,968	11	19	19
Molybdenite conc. <sup>2</sup>	570	1,180	100	—
Alumina <sup>2</sup>	141,569	17	—	—
Tantalite ore <sup>2</sup>	—	17	—	—
Crystalline graphite <sup>2</sup>	3,063	254	683	—
Amorphous graphite <sup>2</sup>	40,739	14,806	18,744	—
Asbestos <sup>2</sup>	—	3,186	—	—
Talc <sup>2</sup>	7,723	3,764	9,483	8,326
Kaolin <sup>2</sup>	31,935	1,766	8,723	9,457
Pyrophyllite <sup>2</sup>	48,182	9,830	14,281	10,693
Fluorite <sup>2</sup> (80% CaF <sub>2</sub> )	59,800	5,553	9,802	8,814
Columbite <sup>2</sup>	—	950	1,100	—
Monazite <sup>2</sup>	150	85	707	1,005
Tin ore <sup>2</sup> (5% SnO <sub>2</sub> )	—	—	150	—
Barite conc. <sup>2</sup> (98% Ba)	—	—	918	305

1. Fine ounces. 2. Metric tons. 3. Kilograms.

## MALAYA

Area . . . . . 7,800 square miles

Capital . . . . . Kuala Lumpur

Chief Mineral Products—Tin, iron, gold.

Currency Unit . . . . . Malayan Dollar

Value . . . . . \$50

The only mineral to show a decrease in production in Malaya in 1954 was coal. The output for 1954 was 224,540 tons, a decrease of 22 percent. Two underground mines were closed and the labor force reduced by 40 percent.

Production of tin-in-concentrates during 1954 set a postwar record with 60,690 tons, 8 percent above the 1953 figure. During the year, political conditions tended to improve, but the emergency is not yet over. In particular, large-scale prospecting, which the Malayan tin industry so urgently needs, is still almost a military operation. Six dangerous and exasperating years have steadily depleted the ore reserves and the need for intensified exploration and prospecting is most pressing.

There were 719 tin mines operating at the end of December 1954 compared with only 629 at the end of 1953. The following figures show the differences by method:

	1953	1954
Dredges	76	79
Gravel dumping	482	567
Hydraulic mining	10	11
Open-cast	5	5
Underground	11	9
Small, no machinery	47	48

The search for new deposits of columbite continues throughout Malaya. Demand for the ore still far exceeds supply and the high price ruling ensures that this mineral will continue to attract the attention of all the leading mining companies. Production during 1954 at 111 tons was more than double that of 1953.

The Trengganu iron ore mines report a record production for 1954 of over 1,200,000 tons, which is 10 percent above the previous record of more than 1,000,000 tons in 1953.

**Production of Minerals in Malaya in 1952, 1953, and 1954**

Commodity	1952	1953	1954
Tin <sup>1</sup>	56,838	56,254	60,690
Coal <sup>1</sup>	314,022	286,364	224,540
Iron ore <sup>1</sup>	1,055,506	1,062,678	1,212,780
Ilmenite <sup>1</sup>	21,968	26,570	44,745
Scheelite & Wolframite <sup>1</sup>	68	129	99
Columbite	47	52	111
Bauxite	21,796	152,170	165,621
Gold <sup>1</sup>	9,806	18,283	20,955

1. Metric tons. 2. Fine ounces.

Bauxite production at the Pengerang mine in South Johore, which started in

## PAKISTAN

Area . . . . . 350,000 square miles

Capital . . . . . Karachi

Currency Unit . . . . . Rupee

Value . . . . . \$0.3050

Chief Mineral Products—Chromite.

The Photographic Survey of Baluchistan by the Canadian Photographic Survey has been completed on a scale of approximately 1½ inch equals one mile. The geology is now being filled in by a party of Canadian geologists assisted by the Pakistan Geological Survey. This survey is likely to be of considerable value to oil companies in the future.

The stibnite deposits of Chitral have also been reopened during the year but their future is still a matter of speculation. However, Messrs. Pakistan Industries Ltd. are erecting a plant for refining of antimony which should be extracted from the Chitral stibnite mines.

Pakistan Industries has also installed a pilot plant of about 5 tons per day in Karachi. This plant has been designed and built to concentrate by a new process the low-grade Baluchistan chrome ore. The plant has proved to be very successful and another one of 20-ton capacity is under construction.

Mineral developments other than that of Sui gas have been of minor importance. A new area for metallurgical chrome near Ras Koh in northwest Baluchistan and deposits of high-grade fire-clay in the Himalayan area are of local interest.

**Pakistan Mineral Production in Metric Tons for 1953 and 1954**

Commodity	1953	1954
Limestone	878,722	819,649
Chromite	32,442	21,863
Gypsum	27,527	31,150
Silica sand	7,717	14,217
Fireclay	5,298	7,079
Celestite	821	361
Ochres	510	628
Iron ore	—	714

## SAUDI ARABIA

Area . . . . . 870,000 square miles

Capital . . . . . Mecca and Riyadh

Currency Unit . . . . . Saudi Riyal

Value . . . . . \$0.2725

Chief Mineral Products—Gold, silver, copper, salt.

During 1954, only two mines were in operation. The Zulm mine, owned by the





## Another Way to **HARD-FACE CRUSHER JAWS WITHOUT DISTORTION**

A good many operators of crushing equipment consider the hard-facing of jaws a mighty ticklish job; the bugaboo being distortion resulting from welding heat. But H. D. Sutcliffe, maintenance weldor at Buell-flat Rock Company in Solvang, California, has a good answer to this problem. Perhaps his method will be applicable to your operations.

Mr. Sutcliffe has a large rack on which he places a number of spare crusher jaws or segments side by side. During the course of the day skip welds are applied from jaw to jaw as time allows, using Stoodly Moly-Manganese for rebuilding and Coated Tube Stoodite for the final

passes. In this way welding heat is never permitted to build up sufficiently to cause warpage. The Moly-Manganese deposits are peened and wire brushed as they are laid down. By the time the jaws on the rack are finally rebuilt and hard-faced, it is time to remove the worn jaws from the crusher, setting them up for the same rebuilding treatment.

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regularly giving 2 to 3 times the wear of other materials previously used.

Your Stoodly dealer (consult the yellow pages of your telephone directory) will be glad to give you descriptive literature on all Stoodly alloys, and a copy of the Stoodly Guidebook covering maintenance of all types of heavy equipment. Or you may write to the company.

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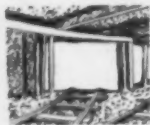
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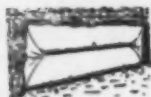
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## Asia

government, was operated briefly. Its  
mill produced 128 ounces of gold in two  
months, so was closed down. Active pros-  
pecting is being carried out in this vi-  
cinity as there are numerous ancient  
workings and tailing dumps. In Saudi  
Arabia, no unworked quartz outcrops of  
any value have yet been found. The  
ancient miners, dating probably from  
2,000 B.C., have apparently discovered  
every gold deposit of value. (The Book of  
Genesis in The Bible mentions the gold  
of Havila and Midian in Nejd and Hijaz.)

Mahad Dhab (Cradle of Gold) mine of  
Saudi Arabian Mining Syndicate, Ltd. is,  
and has been to date, the only dividend

paying mine in the country. It is man-  
aged by the American Smelting and Re-  
fining Company. The ore shoot bottomed  
at 640 feet forcing cessation of mining  
in July 1954, and the company is now  
in the process of liquidation.

Point Four geologists have assisted the  
Saudi government staff in making geo-  
logical surveys and carrying out a pros-  
pecting program. However, renewal of  
these services was not requested by the  
Saudi government, when the present ar-  
rangements expired so this organization  
was withdrawn by the United States gov-  
ernment during the summer of 1954.

## THAILAND

Area ..... 200,000 square miles

Capital ..... Bangkok

Chief Mineral Products—Tin, tungsten, lead, zinc.

Currency Unit ..... Baht

Value ..... \$0.048

The chief metal mining areas of Thai-  
land are Peninsular Thailand, which pro-  
duces most of the country's tin, and the  
area of the "Death Railroad" which cur-  
rently produces all the lead-zinc ores  
and most of the tungsten. This railroad  
was built by the Japanese during World  
War II up the valley of the Kwae Noi  
to connect the Thia and Burmese rail-  
roads in order to supply the Japanese  
forces in Burma. Since the war the rail-  
road has been allowed to fall into ruin  
and only about 40 miles at the lower  
end of the valley or about 20 percent of  
the total length can be used.

In 1953, the total shipments of hand-  
picked lead-zinc concentrate from Thai-  
land averaging about 36 percent Pb and  
20 percent Zn came to 7,960 tons, of  
which 2,399 tons were produced by the  
Boi Noi Galena Company, and 5,561 tons  
by the United Mineral Company. Prelim-  
inary figures for 1954 are around 11,500  
metric tons for total lead-zinc concen-  
trate shipments from Thai.

The chief tungsten producing area is  
the Pilok district on the Burmese border  
about 35 miles from Kwae Yai. Owing  
to the drop in wolframite concentrate  
prices, the total number of mines operat-

ing in this district dropped from a re-  
ported 32 in 1953 to 10 by the end of  
1954. The area has large reserves in  
placer and lode of wolframite ore but  
it is handicapped not only by the drop in  
tungsten prices, but by excessive trans-  
portation costs and the difficulties in im-  
porting mining equipment and supplies.  
Concentrate averages 72 percent WO<sub>3</sub>,  
and mining is done both by monitors and  
drilling and blasting. The high-grade ore  
from both bench and mine is hand-  
picked, cobbled, and stage crushed by  
small crushers to release the mineral  
which is recovered in washing plants.

The most noticeable development in  
1954 in the Thai mining field was the  
influx of Japanese interests. A furnace  
site has been laid out at Khanburi at the  
lower terminus of the Death Railroad and  
it has been announced that a company  
jointly owned by Japanese interests and  
the Thai government will treat the hema-  
tite deposits of the lower Kwae Noi using  
charcoal as fuel. The Japanese are also  
actively engaged in developing nonfer-  
rous metal properties and the govern-  
ment has recently announced the joint  
construction of a proposed tin smelter  
for Thailand.

## TURKEY

Area ..... 296,503 square miles

Capital ..... Ankara

Chief Mineral Products—Chrome, copper, manganese, iron, emery.

Currency Unit ..... Lira

Value ..... \$0.3575

Revival of Turkey's chrome export  
trade was of great concern during 1954.  
Chrome ore shipments from Aegean ports  
declined from 240,000 tons in 1953 to  
120,000 in 1954. Many of the mine op-  
erators slowed down production or ceased  
operating entirely until the market im-  
proved. A special committee finally rec-  
ommended a cut in duty from five per-  
cent to one percent as a way of reviving  
trade and the government acted on the  
suggestion at year's end.

During the year, miners turned to  
prospecting for other minerals such as  
uranium, mica, and scheelite. Scheelite  
was encountered in many sections of the  
province of Edremit, and Stratejik Min-  
eral Ltd. was organized by a group of  
mining engineers, chemists, and geolo-

gists in Ankara to develop about 300  
claims in a promising area. Construction  
of a private laboratory and small con-  
centrating unit were underway.

Sulphur deposits were discovered near  
Osmaniye in the province of Antakya,  
and wolframite in the region of Marmara.

A three-man mission was sent by  
World Mining Consultants, Inc., financed  
by the Foreign Operations Administra-  
tion, to assist in the search for ground  
water supplies for villages and farms in  
the arid valleys of southeast Turkey. The  
mission consisted of a hydrogeologist,  
and two master drillers who tested for  
water and also instructed Turkish engi-  
neers and drillers in United States tech-  
niques.

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FOR MOVING EARTH, ROCK, COAL AND ORE





# OCEANIA

## AUSTRALIA

Area . . . . . 2,974,581 square miles

Capital . . . . . Canberra

Chief Mineral Products—Lead, zinc, gold, iron, tungsten, uranium, tin.

Currency Unit . . Australian Pound

Value . . . . . \$2.26

During 1954, production of the principal metals and minerals was maintained or increased. Prices were favorable in the second half of the year and continued so into 1955; the immediate future, at least, is viewed optimistically. When final output figures are verified, records may be established for lead and zinc production.

A boom in uranium prospecting and company promotion occurred near the middle of the year. Early, over-optimistic claims have mostly been discounted but a picture has emerged of a tract of uraniumiferous country, with some very promising ore bodies, running generally from Rum Jungle, Northern Territory, south-easterly into Queensland in the vicinity of Cloncurry.

### QUEENSLAND

Most important developments continue to be near Mount Isa. Mount Isa Mines Ltd. mined a total of 1,189,000 tons of ore for an output of 38,400 tons of silver-lead bullion, 20,100 tons of blister copper and 41,200 tons of zinc concentrates. The company's new, £1,000,000 mine air conditioning plant (the largest air conditioning plant in Australia and the first in a mine) was completed. Diamond drilling at the northern end of the Black Star ore body indicated a large tonnage of low-grade, lead-zinc ore that may warrant open-cutting; while work on the "Northern Leases," 12 miles north of Mount Isa proper, also promised big developments.

Reports of numerous uranium prospects in the Cloncurry-Mt. Isa area dominated the news in the second half of the year. Although most appeared to have no commercial interest, the Mary Kathleen lease, purchased from its discoverers by Australasian Oil Exploration Ltd. for more than £250,000 is undoubtedly important. A.O.E. Ltd. plans to erect a uranium treatment plant, and Mount Isa Mines Ltd. has offered to build a plant for the Australian Atomic Energy Commission if sufficient ore reserves are proved.

Titanium and Zirconium Industries Pty. Ltd., North Stradbroke Island, is increasing rutile output to 14,000 tons per year. This company's deposits are capable of immense expansion whenever demand warrants it.

### NEW SOUTH WALES

Zinc Corporation mine treated 593,000 tons (an increase of 30,600 tons), while New Broken Hill Consolidated mine in-

creased its output by 79,800 tons to a total of 483,500 tons. North Broken Hill and Broken Hill South each increased production by about 10 percent. North Broken Hill's new shaft, designed to reach 5,000 feet, was at a depth of over 3,000 feet by year's end.

A plate and strip mill being erected at Port Kembla, with a capacity for well over 1,000,000 tons of strip per year, is the largest capital work ever undertaken in Australia by an Australian company. A 3,000-ton-per-day Lurgi sintering plant is to be built at Port Kembla for the purpose of sintering fine ores, especially those from Yampi Sound, W.A.

### VICTORIA

Gold production, the state's principal metal-mining industry suffered by the closure of the dredge of Harrierville (Tronoh) Ltd., and the smaller dredge of Cocks Eldorado Gold Dredging Co. Harrierville dredge is the largest in the southern hemisphere with a nominal capacity of 300,000 cu. yds. monthly. The principal reef gold mine, Morning Star at Wood's Point, was sinking an internal, inclined shaft to a depth of 650 feet below the 2,046-foot level.

### TASMANIA

The Electrolytic Zinc Co. of Australasia Ltd., Risdon, attained a production of 100,000 tons of zinc for the first time. Approximately one-quarter of the metal came from the company's Rosebery mines where ore production is now at a rate of over 170,000 tons per year. Further expansion is under way.

King Island Scheelite Ltd., Grassy, King Island, achieved very high recoveries of concentrate (up to 130 tons per month) early in the year. Smaller tonnages were produced later in the year but prices were more encouraging. The company reported ore reserves in excess of 3,000,000 tons.

### SOUTH AUSTRALIA

Highlight of the year was the opening of the state government £5,000,000 uranium mine and concentrator at Radium Hill in October, somewhat behind schedule. Discovery of a large nickel orebody was reported in the northwestern portion of the state.

Refined lead produced by the Broken Hill Associated Smelters Pty. Ltd. at Port

Pirrie exceeded 200,000 tons for the first time since 1942.

### WESTERN AUSTRALIA

Gold was again the dominant metal in this state, the year's estimated production being about 850,000 ounces. Absorption of a number of Kalgoorlie mines by Gold Mines of Kalgoorlie (Aust.) Ltd. may set the pattern for other mergers designed to give increased operating efficiency and lower costs. Further encouraging results in deep drilling by Kalgoorlie Southern Gold Mines were reported without intersection of actual economic ore channels.

Spectacular developments in the Hill 50 mine at Mount Magnet, where values up to 5 ozs. per ton were encountered in widths of 108 inches, led to formation of several exploration companies who are testing other parts of the field.

Big Bell gold mine, Cue, ceased production due to rising costs. Great Western Consolidated N.L., Southern Cross, continued its program of shaft-sinking and development and proved extensions of better grade ore without achieving any notable increase in gold output.

Development of tin-tantalite deposits began on a more intensive scale. Principal location is near Wodgina.

### NORTHERN TERRITORY

The Rum Jungle treatment plant was officially opened in September. Built by Territory Enterprises Ltd., a subsidiary of Consolidated Zinc Pty. Ltd., it is operated on behalf of the Commonwealth government. First commercial production of uranium ore by a private company was at Brock's Creek. Several mines are now sending ore to Rum Jungle.

An important deposit of uraniumiferous ore in the South Alligator River area, known as Sleisbeck, is being tested by North Australian Uranium Corporation N.L. Late in the year, other rich discoveries, such as the El Sharana lode, were discovered along the line of the South Alligator fault and the government decreed a temporary mining reserve without prejudice to claims already made.

Rio Tinto Ltd. of London opened negotiations with the principal companies having interests in the South Alligator River area, but no agreement on a common development policy had been reached at year's end.

At Tennant Creek, Peko Gold Mine N.L. commenced to operate a new concentrator designed to treat 350 tons of high-grade copper ore weekly. The greater part of concentrate production to date has been treated in Japan. Expansion of mine and mill capacity is proceeding and the company hopes to continue with its plans for a fluosolids roasting plant and eventual electrometallurgy of copper.

The Noble's Nob (Tennant Creek) gold mine of Australian Development N.L. is maintaining ore grades at up to 2 ozs. gold. This small mine, treating about 500 tons of ore weekly, continues to be one of Australia's best dividend-payers. Recoveries are very high at 97.5 percent of gold content. Recent drilling has disclosed further reserves of 2 ounces ore and the mine has a most promising future.

Australian Mine Production of Metals in 1951, 1952, 1953, and 1954<sup>1</sup>

Metal	1951	1952	1953	1954
Gold <sup>2</sup>	895,536	980,435	1,075,400	1,100,000
Silver <sup>2</sup>	10,978,191	11,278,374	12,538,900	13,000,000
Copper <sup>2</sup>	12,483	17,900	36,585	40,000
Lead <sup>2</sup>	197,913	219,100	269,344	280,000
Zinc <sup>2</sup>	152,000	165,000	239,324	250,000
Tungsten <sup>2</sup>	1,110	1,280	1,406	1,150
Tin <sup>2</sup>	1,459	1,700	1,553	1,900
Kaifolin <sup>2</sup>	33,400	36,100	37,101	38,500
Zircon <sup>2</sup>		19,200	27,207	30,000
Iron ore <sup>2</sup>		2,907,754	3,298,718	3,350,000

1. Estimated. 2. Fine ounces. 3. Long tons. 4. WO<sub>3</sub> content. 5. TiO<sub>2</sub> content. 6. Zr content.



## Oceania

## INDONESIA

Area ..... 735,865 square miles  
 Capital ..... Jakarta  
 Currency Unit ..... Rupiah  
 Value ..... \$0.0881  
 Chief Mineral Products—Tin, bauxite.

Tin ore production reached a postwar peak in 1954 with production of 35,627 long tons as compared with 33,822 long tons in the previous year. Home consumption of tin metal increased from 198 tons in 1953 to over 200 tons in 1954, as import of solder decreased because of a shortage of foreign currency and tin metal was substituted for solder.

The Bangka tin mines which have been nationalized yielded top production of tin ore (24,461 long tons) since the war, although efficiency of concentration is still much too low. Highest monthly production was attained in October with 2,638 long tons. Since the withdrawal of the Billiton company the mines have been struggling with a shortage of skilled men. Combined tin production from Billiton and Singkep was down to 11,166 long tons in 1954 from 12,423 in 1953.

Bauxite production for the first nine months of 1954 totaled 110,232 metric tons, compared with 126,071 metric tons in the same period of 1953. Production figures for the last three months were not available at press time.

Total manganese production was also not available. The A.I.M.E. produced about 9,000 tons of metallurgical grade ore with an average of 45 percent Mn. Production came from the company's deposit near Tasikmalaja, West Java.

Iron ore deposits are reported at East Java, West Java, South Sumatra, and Central Borneo. Tjokro Mining Corporation plans to start iron mining in Lampong, South Sumatra. At first the ore will be shipped to Japan; later, plans call for installation of a blast furnace.

## NEW CALEDONIA

Area ..... 8,458 square miles  
 Capital ..... Noumea  
 Currency Unit ..... Franc  
 Value ..... \$0.0158  
 Chief Mineral Products—Nickel, chrome, manganese.

The two principal mineral products extracted in New Caledonia are nickel and chrome ores. The island contributes 10 percent to the supply of the world nickel market, and as far as this substance is concerned, is classed as third in importance among the producing areas.

Although the production of nickel ore in 1954, 524,710 tons, far from equalled that of the previous year which was a record 628,220 tons, the 1954 figure was higher than those of former years. The falling off is due, to a great extent, to the lessening in exports, which fell from 207,910 tons in 1953 to no more than 148,520 tons in 1954.

The greater part of the ore extracted is treated *in situ*; in 1954 7,509 tons of mattes of 71 percent Ni (as against 5,718

tons in 1953, and 4,050 tons in 1952); 5,610 tons of desulphured smelted nickel (S less than 0.05 percent), as against 1,152 tons in 1953; and 4,288 tons of smeltered ingots with a constant of 25 to 30 percent Ni (as against 8,501 tons in 1953 and 9,666 tons in 1952) were produced.

A four-year plan envisages the creation of a dam across the River Yaté which would make possible the production figure of 10,000 tons a year of 77 percent Ni mattes, rising to 15,000 tons a year.

The low market prices for chrome ore caused a drop in output: 84,200 tons, compared with 121,000 tons in 1953, and 107,660 tons in 1952. Exports decreased

by 50 percent, falling from 112,150 tons in 1953 to 59,500 tons in 1954.

In 1949 the production of manganese ore was resumed after an interruption of 30 years. After having reached the figure of 20,100 tons in 1951, it fell to 16,600 tons in 1952, to 5,400 tons in 1953, and totally ceased in 1954. Survey and prospecting operations now in progress indicate that a production figure reaching some tens of thousands of tons annually may be expected to be reached in future years.

Iron ore output, which was about 350,000 tons a year in the pre-war period, has not been resumed since the end of hostilities.

## REPUBLIC OF THE PHILIPPINES

Area ..... 115,707 square miles  
 Capital ..... Manila  
 Currency Unit ..... Peso  
 Value ..... \$0.50  
 Chief Mineral Products—Gold, chrome, copper, iron, manganese, lead, silver.

Surprisingly the year 1954 was again marked by an increase in value of all minerals produced in the Philippine Islands. The 1954 output was valued at Pesos 147,093,073; up from 145,833,393 in 1953. While most of the increase was due to more non-metallic production gold continued as the most important single metal, and copper output showed the greatest value increase. Iron ore also showed a gain to 1,424,898 metric tons from 1,217,864 in 1953. Gold, silver, lead, manganese, and chromite production was lower.

Highlighting the new discoveries of 1954 was uranium ore assaying as high as 0.74 percent U<sub>3</sub>O<sub>8</sub>, associated with molybdenum at Larap, Camarines Norte, on the property of Philippine Iron Mines Company. Copper and gold are also present. Explorative work continues to determine the extent of the deposit.

A mercury deposit was also developed on Palawan Island and a 100 ton furnace is being installed by a subsidiary company of Marsman & Company.

Government projects conducted through the Philippine Bureau of Mines and FCA-Philcusa made extensive surveys of strategic minerals and coal. Surveys for copper, manganese, and nickel-bearing laterites showed good results. The field work on the aero-magnetic survey of six selected iron districts, contracted with Hunting Geophysics, Ltd. of London, was terminated with important developments.

Construction of a 4,000 ton per day flotation mill, and open pit mine development continued on schedule at the Toledo copper mine on the island of Cebu. This project of the Atlas Consolidated Mining

and Development Corporation is a consolidation of three well known Philippine gold mining companies and is headed by Colonel Andres Soriano. This will be the largest copper mine in the Far East. While construction was still underway plans were being made to increase capacity to 10,000 daily tons. The first ball mills turned over at the new mill in late February 1955.

In 1954, producing metal mines in the Islands consisted of 30 operations. There were 13 gold and silver producers; 19 base metal producers; and four producers of byproduct copper, lead and zinc.

Among other activities were the proposed increase of milling capacity of Lepanto Consolidated Mining Company (copper and gold) and beneficiation of ores at Acoje Mining Company, Inc. and Consolidated Mines, Inc. (Chrome), at General Base Metals, Inc. (Manganese), and at the Philippine Iron Mines Ltd. (Iron). Iron ore development and exploration work continued in the Davao, Cagayan, and Zamboanga areas.

The Philippine Bureau of Mines has reported that a year's exploration for iron and nickel resources in Nonoc Island, Surigao, had proven the existence of more than 6,000,000 tons of lateritic material containing 1.8 percent nickel.

The new iron ore beneficiation plant to be built by the Philippine Iron Mines, Ltd. at Larap, Camarines Norte, will be the biggest milling project in the Islands, and will handle over 5,000 metric tons of ore daily. Several types of iron ore will be treated and each must be kept separate until the final treatment after which some will be combined. Two entirely different products will be shipped to the Japanese steel mills.

Production of Metals and Ores in the Philippine Islands  
 For the Years 1949, 1950, 1951, 1952, 1953, and 1954<sup>1</sup>

Commodity	1949	1950	1951	1952	1953	1954
Gold <sup>2</sup>	287,844	333,991	393,602	469,408	480,625	416,052
Silver <sup>2</sup>	218,419	216,034	274,602	693,751	572,046	527,160
Chromite <sup>2</sup>						
Metallurgical	81,404	41,846	32,736	52,364	88,541	62,595
Refactory	165,340	208,665	301,835	491,150	468,549	388,590
Iron ore <sup>2</sup>	370,172	599,095	905,282	1,170,153	1,217,864	1,424,898
Copper <sup>2</sup>	7,007	10,384	12,712	15,264	12,715	14,349
Manganese ore <sup>2</sup>	26,288	29,867	22,343	20,627	21,508	9,595
Lead <sup>2</sup>	550	879	571	2,300	2,434	1,827
Zinc <sup>2</sup>			155	1,596	747	

1. Estimated. 2. Fine ounces. 3. Metric tons.

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## Oceania

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## NEW GUINEA-PAPUA (Australia)

Area . . . . . 183,540 square miles

Currency Unit . . Australian Pound

Value . . . . . \$2.26

Chief Mineral Products—Gold.

During the year there was little activity in prospecting for metals. Prospecting in New Guinea is a difficult matter and large sums of money would be needed in order to make a proper assessment of its mineral potentialities.

Gold continued to be the only important product and even established producers like the Canadian Bulolo Ltd. were depleting their reserves. In six months to November 30, 1954, Bulolo Ltd. treated 8,460,000 cubic yards for a return of 30,532 ounces compared with 69,091 ounces in the previous year.

Mandated Alluvials N.L., which holds the Laloki pyritic-copper deposit, remained inactive during the year.

## NEW ZEALAND

Area . . . . . 103,862 square miles

Capital . . . . . Wellington

Currency Unit New Zealand Pound

Value . . . . . \$2.24

Chief Mineral Product—Gold.

Mining activity was not at a high level during the year. The established gold dredges, such as that of Arahura Gold Dredging Co. at Arahura, accounted for the greater proportion of output. Arahura dredge treated 300,000 cubic yards per month for a yield of about 900 ounces of gold toward the end of 1954. Part of the gold-bearing Clutha River bed will be pumped dry in 1955 during construction of the Roxburgh hydroelectric project dams, and it is hoped that payable values will be disclosed.

Reports have been made that the Eagle Picher Co. of Cincinnati will examine copper-lead-zinc deposits at Te Aroha, 100 miles south of Auckland. Discovery of important orebodies would prove invaluable to the Dominion.

Little interest appears to have been taken in prospecting for uranium. Some geological features of the North island are favorable while the existence of radioactivity in spring waters has been confirmed. In general, New Zealand's terrain is more difficult for prospecting than the flatter, more open country in many parts of Australia.

The United Kingdom Atomic Energy Authority and the New Zealand government now expect that the initial power unit dependent on geothermal steam at Wairakei will be of 40,000-kilowatt capacity. Tests also indicate that conditions are favorable for heavy water production.

# NORTH AMERICA

## CANADA

Area . . . . 3,690,410 square miles

Capital . . . . . Ottawa

Chief Mineral Products—Nickel, asbestos, gold, copper, uranium, iron, lead, zinc.

Currency Unit . . . Canadian Dollar

Value (1954) . . . . . \$1.018

It was a top year for mine discoveries, mineral production, and exporting of primary minerals and metals in Canada in 1954.

Mineral output hit an all-time high of \$1,099,439,759—a gain of about \$76,000,000 over the \$1,022,822,333 turned out in 1953. Nine provinces, as well as the Yukon and Northwest Territories, showed increases in value of minerals produced with Ontario providing the lion's share—\$484,992,796 or 33.4 percent—of the total.

Exports of primary minerals and metals in the first eleven months totalled \$719,620,773, up from \$713,079,737 in the like period of 1953.

Great waves of staking swept various parts of the country. Again, it was Ontario that saw the largest total of claims staked. Rushes in the north and northwest portions of the province, for base metals and uranium prospects, caused an all-time provincial record of 50,230 claims to be staked in Ontario during 1954. At 40 acres a claim, that equals better than 2,000,000 acres—greater than the 1,400,000-acre area of Prince Edward Island, a whole province (and, incidentally, the only province that does not produce any minerals).

Biggest news Canadian mining made during the year came out of the bleak, sub-Arctic open pits of New Quebec-Labrador where Iron Ore Co. of Canada started production and shipment of high-grade iron ore for the blast furnaces of Canada and the United States. IOCC shipped close to 2,000,000 tons from July 31 to the time ice halted freighter sailings from the company's St. Lawrence River loading docks at Sept. Isles. During 1955 it aims to ship 6,000,000 tons which, in itself, will add better than

\$50,000,000 to this year's total mineral output.

Biggest finds of last year were revealed in prospecting and exploration work at Manitouwadge, Northwestern Ontario (Geco Mines got the copper-zinc deposit with an estimated gross value of \$290,000,000); near Stewart, British Columbia (Granduc Mines indicating the possibility of 44,000,000 tons in the copper deposits); at Little River, New Brunswick (American Metal, 75 percent, and International Nickel, 25 percent, making the multi-million-ton lead-zinc find); and near Val d'Or, Northwestern Quebec (Quebec Lithium Corp. now building a 1,000-ton concentrator to produce lithium concentrates from its 10,000,000-ton find).

New producers, besides making mining news in their own right, also shared in the main metallurgical developments of the year. Sherritt Gordon Mines started production at its Lynn Lake mine in Manitoba and its treatment plant near Edmonton, Alberta turning out refined copper, nickel, and cobalt metal using its new Forward process. Back east in Ontario, International Nickel commenced production of electrolytic cobalt for the first time in Canada at Port Colborne and Noranda Mines began making elemental sulphur (also for the first time in Canada) and high-grade iron from pyrites at a new treatment plant at Port Robinson.

One of the new producers ready to go at year's end was Noranda Mines' subsidiary Gaspe Copper Mines at Gaspe, Quebec. Production did not commence because of a mechanical hitch in the longest submarine power cable in the world (laid under the St. Lawrence to deliver power from a new hydroelectric

development on the north shore to Gaspe on the south). The cable will be repaired when ice goes out of the river this spring; then the company's giant 6,000-ton concentrator will turn over.

Opemiska Copper Mines, which started production in December 1953, got its 400-ton mill up to capacity in the Chibougamau camp, Northwestern Quebec. Quebec Copper Corporation, near Eastman in Quebec's Eastern Townships, turned over its 700 to 750-ton mill in February, and soon had it at capacity.

Asbestos was turned out by a new producer during 1954—Cassiar Asbestos Corporation at McDame Lake, northern British Columbia. The firm switched from an experimental talus mill to a 500-ton production-size unit during midsummer, and soon showed its earning power.

In the world's largest asbestos-producing area—at Thetford, Quebec—numerous expansion projects went forward. Canadian Johns-Manville brought the first section of its new mill into production and Asbestos Corporation by year's end was ready to turnover its new 15,000-ton Normandy mill.

Out west at Pine Point, on the south shore of Great Slave Lake, Northwest Territories, Consolidated Mining and Smelting Co. of Canada decided it had done enough drilling on its vast lead-zinc property to start considering the possibility of bringing the huge holding into production. Potential of COMINCO's property looks as large as the whole tri-State mining area of the United States.

And in Manitoba, International Nickel drillers at last obtained enough information for the company to decide to go ahead in 1955 with shaft sinking at its low-grade Mystery Lake nickel property.

In Northern Saskatchewan, Gunnar Mines raced ahead with pit stripping and mill building to bring its uranium orebody into production some time this year. Many other companies continued systematic exploration of uranium properties in the same Beaverlodge camp.

Uranium loomed larger in Ontario. In the Blind River area a great many companies were spurred to further activity by the large finds, and large production preparations made by Algom Uranium Mines, Pronto Uranium Mines, and Buckles Uranium. Some pleasing results were obtained in underground development of uranium properties in the Bancroft area, southeastern Ontario.

Ontario's Sudbury area hummed as International Nickel stepped up output of nickel and copper and was busy spending about \$16,000,000 in construction of a plant to produce high-grade iron. In the same camp, Falconbridge Nickel Mines' growing stature was evident as it drove ahead steadily with a multi-million dollar program that will bring into production a multiplicity of new mines.

In southeastern Ontario, Bethlehem Mines put the finishing touches to its mine and shipping facilities for production of iron ore from its Marmorata pit. Farther east, in Nova Scotia, National Gypsum went ahead with a \$6,000,000 program to bring in a new quarry near Halifax.

Metal Production and Value in Canada 1952, 1953, and 1954

Commodity	1952 <sup>1</sup>		1953 <sup>2</sup>		1954 <sup>3</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Antimony <sup>4</sup>	2,330,900	\$ 601,483	1,488,105	\$ 291,862	1,201,000	\$ 321,150
Bismuth <sup>4</sup>	162,373	347,224	117,366	209,557	272,700	583,174
Cadmium <sup>4</sup>	948,587	2,086,891	1,118,285	2,236,570	1,027,221	1,746,276
Cobalt <sup>4</sup>	1,421,943	3,226,903	1,602,545	4,013,077	2,181,900	5,593,200
Copper <sup>4</sup>	516,075,097	146,679,040	506,504,074	150,953,742	599,851,280	174,139,274
Gold <sup>4</sup>	4,471,725	153,246,061	4,055,723	139,597,985	4,279,852	145,814,558
Indium <sup>4</sup>	404	699	6,752	9,588	—	—
Iron ore <sup>5</sup>	5,271,849	33,744,311	6,509,818	44,102,944	7,280,256	46,758,382
Iron ingots <sup>5</sup>	32,422	1,815,007	107,370	4,064,039	90,885	2,939,144
Lead <sup>4</sup>	337,683,891	54,671,021	387,411,388	50,076,822	442,542,820	58,990,957
Magnesium and calcium <sup>4</sup>	—	4,812,368	—	5,295,840	—	4,576,024
Molybdenite (MoS <sub>2</sub> ) <sup>4</sup>	805,964	409,831	323,907	215,527	875,000	534,000
Nickel <sup>4</sup>	281,117,072	151,349,438	287,385,777	160,430,098	319,983,340	180,196,300
Palladium, rhodium, iridium, ruthenium, etc. <sup>4</sup>	157,407	7,559,109	166,018	7,495,409	176,528	7,494,809
Platinum <sup>4</sup>	122,517	10,916,792	137,545	12,550,981	149,145	12,505,758
Selenium <sup>4</sup>	242,030	786,599	262,346	1,101,854	368,800	1,844,000
Silver <sup>4</sup>	25,222,227	21,065,603	28,299,335	23,774,271	31,541,757	26,261,667
Tellurium <sup>4</sup>	6,035	10,259	4,694	8,215	7,200	12,600
Tin <sup>4</sup>	212,113	253,581	1,092,274	581,746	390,000	226,200
Titanium ore <sup>5</sup>	51	459	9,294	80,085	7,500	17,512
Tungsten (WO <sub>3</sub> ) <sup>4</sup>	1,493,111	4,488,237	2,446,028	5,689,169	2,000,732	3,596,387
Zinc <sup>4</sup>	743,604,155	129,833,285	803,523,295	96,101,386	747,718,334	89,277,569
Total Value Metals		\$727,904,366		\$708,880,758		\$765,428,741

1. Tabulation by the Dominion Bureau of Statistics. 2. Preliminary. 3. Pounds.  
4. Fine ounces. 5. Tons.



# EUROPE

## AUSTRIA

Area ..... 32,369 square miles

Capital ..... Vienna

Chief Mineral Products—Iron, magnesite, antimony, lead, zinc, copper.

Currency Unit ..... Schilling

Value ..... \$0.0390

Steep production increases in certain Austrian mining fields during 1954 were balanced by decreases in other mining sectors, predominantly the open-pit enterprises. This unfavorable development was caused by the unusually poor weather conditions prevailing at the beginning of 1954, while the increase in output was the direct result of the American-assisted Austrian long-term investment policy and efforts.

The iron ore yield, depending to more than 90 percent on the Styrian Erzberg (ore mountain) with its triple production means (funneling shafts for dumping mined ore from the peak to the foot of the Ore Mountain, the horizontal shaft system, and the open-pit mining sector) dropped during 1954 when the chief mining method, open pit operations, was slowed down almost to a halt during January and February. The 1953 production at the ore mountain amounted to 2,745,500 metric tons for all three production methods, while the 1954 output reached only 2,709,900 metric tons of raw iron ore. Open pit operations during 1953 yielded 1,757,620 metric tons, and 1,746,460 metric tons during 1954.

Biggest of the ore mining companies is the Alpine Montan A.G., owner of the Erzberg and the smaller Radmer and Huettendorf deposits, followed by the Konkordia-Hueite, which mines the Schaeferetz deposit. Activities during 1954 saw the continuation of the Alpine Montan's drive to do away with tracks, both for production and for the transport of ores. Also at the Erzberg, a new vertical shaft, to be the center unit for ore transport from the horizontal shafts to the mountain's foot, is nearing completion. At Radmer as a substitute for the avalanche-endangered ore railroad, a near-horizontal shaft inside the mountain neared the final blue-printing stage, although no definite time was set for the execution of this project.

In the sector of lead zinc, Austria's production shows a marked improvement in the yield of ores, although the processing results of 1954 are below those of 1953. The monopoly in the zinc field is with the Bleiberg Bergwerks Union, a nationalized enterprise. This company works the Bleiberg-Kreuth, Kovesnok, Schneidergraben, Windische Hoehe, and Mattschiedl deposits, and also mines the leased sites at Rabenstein, and Lafatsch. During 1954 the BBU was able by constant search activities to increase its proven deposits.

Both copper ore and copper concentrate output increased slightly during 1954. Austria possesses one processing plant, the Montanwerke Brixlegg, and two (heat-treating) centers, one at the BBU's Gailitz plant, the other at Brixlegg. The mines are located in Salzburg and Tyrol provinces, exclusively, the biggest one, Mitterberg, and Buchberg in Salzburg; Roehrbuehel, Gosskogel, and Schwaz in the Tyrol.

Bauxite production (open pit mining at Blahberger Hochkogel, Praefigkogel, both Unterlaussa area) accelerated by the owner, the Vereinigte Aluminium Werke Braunau-Ranshofen, was several thousand tons shy of the 1953 record. This was because of the production losses during the winter 1953/1954. Processing plants are Ranshofen (Upper Austria province) and the Lend Aluminium Werke in Salzburg province. Bauxite up to 6 percent SiO<sub>2</sub> is sent for processing to West Germany and re-imported. The rest goes to the mill industry and to the production of corundum.

Production of magnesite also took an upswing during 1954. Instead of 1953's 813,000 metric tons, the two-company Austrian magnesite industry reached 839,000 metric tons. Both the Oesterreichisch-Amerikanische Magnesite A.G. and the Veitscher Magnesit Werke A.G. have one subsidiary company each, the Zillertaler Magnesite Werke for the first, and the Steirische Magnesit Industrie A.G. for the latter enterprise. (The Austro-American Magnesite Works on U.S. capital, the Veitscher Magnesite on French funds).

### Austrian Production of Ores, Minerals, and Metals in Metric Tons in 1952, 1953, and 1954

Commodity	1952	1953	1954
Iron ore—total	2,652,588	2,756,630	2,720,000
Iron ore—			
from open pits	1,735,860	1,757,620	1,746,460
Lead-zinc ore	150,311	116,000	164,700
Lead			
concentrate	7,193	7,837	6,844
Refined lead	8,758	11,102	8,137
Zinc concentrate	8,619	8,715	9,222
Copper ore	135,105	168,000	174,655
Copper			
concentrate	9,405	10,728	10,820
Electrolytic copper	6,438	8,590	9,051
Bauxite	15,180	17,735	17,266
Aluminum, raw	36,706	43,476	48,047
Magnesite	742,259	813,000	839,000
Pig iron	1,172,711	1,321,905	1,649,400
Gypsum	—	299,946	366,513
Antimony	—	10,065.4	10,065

## CYPRUS

Area ..... 3,584 square miles

Capital ..... Nicosia

Chief Mineral Products—Copper, pyrite, chrome, asbestos, gypsum, gold.

Currency Unit ..... Pound Sterling

Value ..... \$2.80

The activities of the principal mining concerns on the Island are summarized below.

Cyprus Mines Corporation is an en-

tirely American-owned company. Output from its Mavrovouni mine during 1954 amounted to a total of 680,692 dry long tons as compared with 681,652 dry long

tons in 1953. Particulars of production during the years 1953 and 1954 are given below:

Commodity	1953	1954
Copper concentrates <sup>1</sup>	73,181	73,289
Cement copper <sup>1</sup>	1,883	2,314
Cupreous pyrites <sup>1</sup>	111,844	75,614
Gold in Cu concentrate <sup>2</sup>	6,951	6,302
Silver in Cu concentrate <sup>2</sup>	63,434	60,890
Flotation pyrites <sup>1</sup>	422,970	452,805

1. Dry long tons. 2. Fine ounces.

The Skouriotissa, Mathiati, and Apliki properties of Cyprus Mines were not operating during 1954, but the exploration program covering the various leased areas was carried on during the year.

Hellenic Mining Company Limited holds a total of 42.55 square miles of mining leases, in the areas of Kalavassos-Asgata, Mitsero-Agrokipia, and Kambia-Sha, plus 35 prospecting permits in various parts of the Island. New important pyritic ore bodies have been discovered in the Mitsero-Agrokipia area and plans have been completed for an up-to-date pyrites beneficiation plant to be erected in this area. A new railroad and a second loading installation will also be constructed. Production of copper bearing pyrites amounted to 217,216 tons against 167,492 tons in 1953. Exports of pyrites were as follows in comparison with 1953:

Destination	1953	1954
W. Germany	82,254	140,818
U. Kingdom	25,663	38,849
Holland	25,303	34,109
Switzerland	4,990	3,376
Italy	10,857	—

Total 149,067 tons 217,152 tons  
Open pit operations in the Mitsero-Agrokipia and Kambia-Sha leases involved the removal of about 200,000 tons of overburden. Exploratory drilling continued with the total footage drilled during the year amounting to 30,636 feet. Geophysical and other geological surveys were also carried out extensively at the leased and prospecting permit areas.

Gypsum & Plasterboard Co. Ltd., a subsidiary of the Hellenic Mining Company Limited, is actively working deposits of gypsum in the Kalavassos-Vasiliko area and operates its plaster and plasterboard plants at Vasiliko.

Cyprus Asbestos Mines Ltd. has a lease over practically all the asbestos bearing area in Cyprus. Mining operations were as usual carried out during the dry months of the year from April to November. During the working season of 1954 a total of 1,473,874 tons of rock was mined against a total of 1,782,459 tons in 1953. This tonnage yielded 392,525 tons of raw material compared with 440,750 tons in 1953. Recovery of marketable asbestos fibre amounted to 15,309 short tons against 15,880 tons in 1953.

The Cyprus Sulphur and Copper Company Ltd., announced that during 1954, the new mill and reconstruction of the aerial tramway were completed and production from the Limni open pit begun. Production and export figures have not been reported. Exploratory drilling and geological examinations at the company's concession continued.

The Cyprus Chrome Company Ltd., of Ayios Nicolaos continued operating the chrome mine on Troodos. Mining was carried out on the new level at Kokkinorotsos where enlarged ore bodies provided about 15,000 tons of ore against 10,000 in 1953.



## EIRE

Area ..... 27,000 square miles  
 Capital ..... Dublin  
 Currency Unit ..... Erie Pound  
 Value ..... \$2.80  
 Chief Mineral Products—Lead, zinc, barite, gypsum.

Lead and zinc production was maintained at about the same level as for 1953. There was a renewal of barite production and 700 tons of crude ore was exported to the United Kingdom.

Information was released during the year of the activities of the government financed mining company, the Mianrai Teoranta. This company has been prospecting and developing an abandoned copper pyrites mine at Avoca, in County Wicklow for several years. The ore is reported to be a complex one containing approximately 1 percent Cu. Sulphur available has not been stated although it is generally understood to be of an economic grade. Lead and zinc sulphides are present in certain sections of the property. Ore reserves are in excess of 12,000,000 tons, and diamond drilling is still in progress. Over £500,000 (\$1,400,000) has been expended on the property to date and as it is not the policy of the Irish government to operate a producing mine it is possible that it will be offered for sale in the not too distant future.

The Abbeytown Mining Company Limited, a subsidiary of Johannesburg Consolidated, operating a 400 tons-per-day lead-zinc mine in Sligo, maintained production and benefited by the increased lead and zinc prices.

Silvermines Lead & Zinc Company proposes to resume production of lead sulphide flotation concentrates within the next three months. Mining will be at the rate of 5,000 tons per month and will be gradually increased to 10,000 tons. A Heavy Media Separation Plant is being introduced into the circuit after which the mined tonnage will be further increased to 20,000 tons per month.

The Wicklow Mining Co. Ltd., had a successful year's operation and continued mining at approximately 50 tons per day. Lead sulphide concentrates were recovered from Jigs and tables. The sphalerite was not recovered. Benbulbin Barytes Ltd., resumed mining its deposits in Sligo. Gypsum mining is confined to County Cavan where there was increased activity during the year.

## FINLAND

Area ..... 136,054 square miles  
 Capital ..... Helsinki  
 Currency Unit ..... Finnmark  
 Value ..... \$0.004348  
 Chief Mineral Products—Copper, pyrite, gold, tungsten, zinc, ilmenite.

In 1954 mining activities in Finland were highlighted by the completion of the new Keretti surface plant of the Outokumpu Copper mine and by the start of production in the Vihanti Zinc

mine, both owned by the Outokumpu Company. The basic capacity of the new Keretti concentrator is the same as that of the old Outokumpu concentrator, or 600,000 metric tons per year. The Vihanti concentrator was designed to handle 400,000 tons of ore annually. As the operations in Vihanti were started late in 1954, the figures shown indicate only trial runs.

Outokumpu Company closed down the Nivala nickel-copper mine as the ore reserves were exhausted. The operations of the Orijärvi lead-zinc-copper mine were discontinued in December pending the results of further diamond drilling.

During 1954 full production was reached in Otanmäki iron-titanium mine. Late in 1954, the Finnish Government advanced a sum of 500 million Finnmarks (about U.S. \$2,200,000) for the erection during 1955 of a vanadium plant where the vanadium content carried by the Otanmäki magnetite concentrate (about 0.5–0.6 percent V) will be separated by chemical methods. At first, one half of the magnetite concentrate produced will be treated in the vanadium

### Mine Production of Ores Milled, Minerals, and Metals Recovered by Finnish Mining Companies in Metric Tons for 1953, and 1954

Commodity	1953	1954
Outokumpu Company		
Ore milled	1,047,403	1,004,467
Copper conc. <sup>1</sup>	83,194	101,992
Pyrite conc.	258,712	249,569
Zinc conc.	6,579	9,159
Lead conc.	389	478
Tungsten conc.	20	110
Nickel-copper conc.	7,115	3,017
Otanmäki Company		
Ore mined <sup>2</sup>		503,803
Ore milled <sup>2</sup>	68,000	396,032
Magnetite conc.	16,700	134,022
Ilmenite conc.	3,140	\$0,589
Pyrite conc.	475	2,946
Vuoksenmäki Company		
Ore milled	143,734	120,000
Gold <sup>3</sup>	325	316
Silver <sup>3</sup>	291	290
Copper conc.	457	451

1. Average Cu content was 19.3 percent. 2. Difference between ore mined and milled is the lump waste separated in a magnetic cobbing plant. 3. Kilograms.

plant. Vanadium production is expected to begin early in 1956.

## FRANCE

Area ..... 212,659 square miles  
 Capital ..... Paris  
 Currency Unit ..... Franc  
 Value ..... \$0.0029  
 Chief Mineral Products—Bauxite, potash, iron, lead, zinc, pyrite, tungsten.

The production of iron ore, which was only 33,000,000 tons in 1938 and which did not exceed 7,700,000 tons in 1945, recovered its old rate in 1951 (35,200,000 tons) and continued to progress, reaching the record figure of 43,824,000 tons in 1954. This development was due to the carrying out of an initial mine modernization program, which was completed in 1952. A new program, which extends from 1952 to 1958, will make it possible to raise French production to the figure of 55,000,000 tons per year.

The production of bauxite continued to show a slow upward trend. The 1954 production figure was 1,274,800 tons, of which 320,000 tons were exported. The year 1954 broke the aluminum production record with a figure of 122,000 tons as compared with 112,176 tons for 1953. Exports showed a drop: 25,000 tons as against 38,340 tons.

In 1954 16,620 tons of lead ore were mined, of which 1,300 tons were of cerussite, and 15,320 tons were of galena, as against 18,830 tons in 1953 and 19,380 tons in 1952, which was the rec-



TREPCA MINE concentration plant and refineries at Zvecan, Yugoslavia. This mine is the largest lead producer in Europe, and one of the most important zinc producers. View shows the flotation mill and lead refinery building.

## Europe

ord year. The imports of lead ore into France rose from 50,000 to 60,000 tons a year to 94,000 tons in 1954. The extraction of zinc ore rose to 19,200 tons in 1954. The importation of zinc ore rose to 233,000 tons. The manufacture of refined lead in the Nouvelles Godault, Penarroya plant was 61,420 tons in 1954 as against 54,780 tons in 1953. That of zinc metal rose from 80,940 tons in 1953 to 111,000 tons in 1954, due to the increased output by five French foundries and the installation at the Aubry plant of a new battery of vertical retort furnaces from the United States.

The production of potassium salts has been relatively stable since 1950. In 1954 the figure was 996,000 tons, of which 506,000 tons were exported. In 1954 France extracted 39,700 tons of barite; 82,800 tons of calcium phosphate; 54,000 tons of fluor spar, and 107,800 tons of talc.

## GREENLAND

Area . . . . . 736,518 square miles

Chief Mineral Products—Cryolite, lead, zinc.

The narrow strip of land between the ice cap and the sea on the west coast of Greenland contains the only commercially workable deposit of cryolite in the world. This mine is located at Ivigtut. Owned by the Danish government, it is operated under concession by Kryolitselskabet Oresund A/D. During 1954 approximately 30,000 tons of cryolite were produced.

On the east coast, lead-zinc deposits are being developed by a Danish-Swedish-Canadian company, Nordish Mineselskab A/S (Northern Mining Company), at Blyklippen. A diamond drilling and underground exploration program has resulted in developing mineable reserves. A flotation mill is to be constructed at the ore body during 1955. The mill will have an annual capacity for producing about 10,000 tons of lead concentrate and 8,000 tons of zinc concentrate. Design and construction of the mill will be by engineers of The Boliden Mining Company of Sweden. First production is expected in early 1956.

## FEDERAL REPUBLIC OF GERMANY

Area . . . . . 94,723 square miles

Capital . . . . . Bonn

Currency Unit . . . . . Deutsche Mark

Value . . . . . \$0.2385

Chief Mineral Products—Iron, potash, lead, zinc, fluor spar.

Mine output generally increased in 1954 with the exception of iron ore, the production of which was about 10 percent lower than in 1953. Increases ranged

between 4 and 7 percent for non-ferrous metal ores and pyrites and amounted to about one-fourth for potash salts.

The lower output of iron ore was due to the fact that the iron and steel works prefer high-grade foreign ore. As a result of the general improvement in the iron and steel industry during the second half of the year, no further decrease of domestic ore output is expected for the near future. Domestic sales of potash salts decreased somewhat during 1954, but exports remained on a high level and

a further increase of sales abroad is expected. Copper mining at Sontra will cease, as soon as new industries are able to absorb the people now being employed in the mine.

Primary aluminum output increased about 21 percent in 1954, while refined copper and slab zinc production advanced slightly more than 10 percent and refined lead production remained about the same. Pig iron and steel output increased 7 and 13 percent, respectively.

Smelter Production in Western Germany in Metric Tons  
For 1951, 1952, 1953, and 1954

Commodity	1951	1952	1953	1954 <sup>1</sup>
Aluminum	74,132	100,474	106,940	129,219
Lead (incl. lead produced by battery manufacturers)	149,680	135,473	147,025	147,677
Copper (refined)	204,848	187,706	211,677	234,291
Zinc (excluding dust)	148,465	150,804	150,619	169,339
Tin (unallayed)	848	1,442	1,574	1,355
Tin alloys	2,440	3,088	2,670	3,781
Solder	6,105	5,676	7,522	8,768
Pig iron	10,697,000	12,877,000	11,654,000	12,513,000
Steel ingots and castings	13,506,000	15,806,000	15,420,000	17,425,000

1. Estimated.

Mine Production in Western Germany in Metric Tons For  
1950, 1951, 1952, 1953, and 1954

Commodity	1950	1951	1952	1953	1954 <sup>1</sup>
Lead ore <sup>2</sup>	46,900	50,700	51,700	63,000	67,600
Zinc ore <sup>2</sup>	98,400	101,900	106,500	116,100	121,200
Copper ore <sup>2</sup>	1,700	2,100	2,700	2,500	2,600
Pyrites	548,961	572,038	571,300	561,727	600,000
Iron ore, crude weight	10,883,000	12,926,000	15,413,000	14,622,000	13,036,000
Iron ore, iron content	2,939,000	3,473,000	4,102,000	3,899,800	3,552,000
Potash salts, crude weight	8,926,534	10,847,600	12,595,100	12,586,400	15,375,000
Potash salts, K <sub>2</sub> O-content	1,095,800	1,323,300	1,553,700	1,577,000	1,935,000
Salt (rock and evaporated)	2,468,600	2,757,300	2,576,000	2,874,000	3,159,300
Graphite	7,238	10,304	8,411	7,108	4
Fluor spar	92,539	140,390	146,570	161,224	4
Barite	285,226	388,836	285,322	303,383	4
Bauxite	4,161	5,381	7,186	7,848	4
Columbite ore	414	9,760	1,470	1,006	4
Gypsum	355,783	468,700	587,263	641,200	4
Feldspar	76,702	98,231	102,909	95,701	4
Soapstone	—	—	12,045	11,892	4
Anhydrite	—	—	906	1,042	4

1. Preliminary. 2. Recoverable metal content. 3. Including recoverable zinc content of pyrite.  
4. Not available.

## ITALY

Area . . . . . 116,228 square miles

Capital . . . . . Rome

Chief Mineral Products—Mercury, pyrite, sulphur, lead, zinc.

A comparison of Italian mineral production in 1954 with that of 1953 (see table) indicates significant gains in most metallic ores but a more varied picture in non-metallics.

Iron ore production passed the 1,000,000-ton mark for the first time since the war years (1940-1942) when supplies from foreign sources were practically nonexistent. Consumption by the iron industry was approximately the same as in 1953, imports, mainly from North Africa and Sweden, having decreased by about 100,000 tons to 632,000 tons. Sardinia, whose producing areas are still Nurra and San Leone, had the biggest part in the increase and has nearly doubled production since 1953.

Better and steadier prices can be considered the most important factor that caused notable increases in lead and zinc ores output; for the former, the figure of 69,000 tons is the highest in the post-war years, for the latter the aggregate production (240,000 tons) is the highest on record, topping the previous peak (in

Currency Unit . . . . . Lira

Value . . . . . \$0.0016

1952) by 2.5 percent. The above figure includes concentrates (average grade 56 percent zinc) and crude, low-grade calamine (26 percent), the first having increased by 10.3 percent to 193,700 tons, while the second showed a slight decline from 48,000 tons to about 47,000 tons.

Smelter production of lead was slightly below 1953, but that of zinc was considerably above the 1953 figures; all zinc plants worked the year round at full capacity. Exports of zinc ores, always a significant factor in the industry, were also up to about 80,000 tons, one of the highest figures of the post-war period, from 53,000 tons in 1953.

Bauxite production was also markedly higher than in 1953, in fact, the highest since the loss to Yugoslavia of the important Istria mines. Imports (from Yugoslavia) were at about the same level as in 1953 (100,000 tons).

Copper concentrate production, while still hardly significant in comparison with the domestic consumption of the metal, was four times that of 1953; the

## Europe

increase is due to a new flotation mill started at the beginning of the year, which treats a mixed sulphide ore from an old mine in Tuscany which was recently re-opened. The mill is the only instance in Italy, and one of the few in Europe, of the treatment of a mixed ore to yield three products (copper, lead, and zinc concentrates).

In spite of considerable efforts in the working of the mercury mines (the tonnage of ore mined was 17.5 percent more than 1953) mercury production increased only 6.1 percent; the average grade of the ore declined very markedly and in 1954 was 9.7 percent lower than in 1953 and 20 percent lower than in 1952.

Exports, both in 1953 and in 1954, were well above production (55,130

flasks and 61,910 flasks) so that stocks of producers are now at a very low level.

Antimony production continued the downward trend and was limited to the Gerrei mines in Sardinia.

1954 was another bad year for Italian sulphur, with exports practically at a standstill and stocks rising, while production decreased again by 8.5 percent; domestic consumption, however, was considerably higher.

Small changes have taken place in the production of fluorspar (1.7 percent increase) and talc (3.5 percent increase). Exports of fluorspar to the United States, which were very important for the Italian producers, are now drastically reduced and prospects are not very bright.

**Italian Metal and Mineral Production in Metric Tons  
in 1951, 1952, 1953, and 1954**

Commodity	1951	1952	1953	1954
Bauxite	174,014	282,912	248,947	295,082
Antimony ore	4,537	4,478	2,343	1,973
Iron ore	552,855	790,237	991,294	1,065,183
Manganese ore	52,721	81,190	78,384	76,310
Mercury ore			197,498	232,055
Lead conc.	64,375	64,665	66,219	69,125
Zinc conc.	212,822	234,411	223,928	240,686
Copper conc.			1,046	4,166
Asbestos fiber	22,612	23,941	20,281	23,546
Barite	76,541	56,274	71,762	71,898
Fluorspar	41,019	59,125	75,790	77,148
Pyrite	898,186	1,141,417	1,234,566	1,231,700
Sulphur	214,340	236,439	223,061	204,040
Talc	75,996	80,336	80,282	
Aluminum metal	49,751	52,830	55,463	57,572
Antimony metal	418	413	234	166
Lead metal	36,000	34,931	37,944	37,331
Zinc metal	47,409	54,851	60,068	66,800
Mercury <sup>1</sup>	53,800	57,740	51,330	54,430

1. Flasks.

## LUXEMBOURG

**Area** ..... 999 square miles  
**Capital** ..... Luxembourg  
**Chief Mineral Product**—Iron.

The only mineral mined in Luxembourg is iron ore. The deposits occur in the basins of Esch and Differdange, along the French border. This is the northernmost extension of the famous Lorraine iron ore deposits. Production in 1954 was 5,887,059 metric tons compared with 7,169,647 tons in 1953.

Three companies are engaged in the iron-steel industry: (1) Société Anonyme des Acières Réunies de Burbach-Eich-Dudelange (ARBED). (2) Société Anonyme des Hauts Fourneaux et Acières de Differdange. St. Ingebert-Rumelange (HADIR). (3) Société Minière et Métallurgique de Rodange.

Luxembourg has the highest per capita steel production in the world, and ranks

**Currency Unit** ..... Franc  
**Value** ..... \$0.02

eighth in world steel output. Approximately 98 percent of this iron-steel production is exported. The present iron ore reserves are estimated at 170,000,000 metric tons containing more than 25 percent iron, and 100,000,000 tons of low-grade ores.

**Iron Ore Produced, Imported, Exported, and Steel Production in Metric Tons for Luxembourg in 1953, and 1954**

Commodity	1953	1954
Iron ore produced	7,169,647	5,887,059
Iron ore imported	4,678,458	4,723,731
Iron ore exported	2,427,830	1,435,188
Steel production	2,622,539	2,828,112

## NETHERLANDS

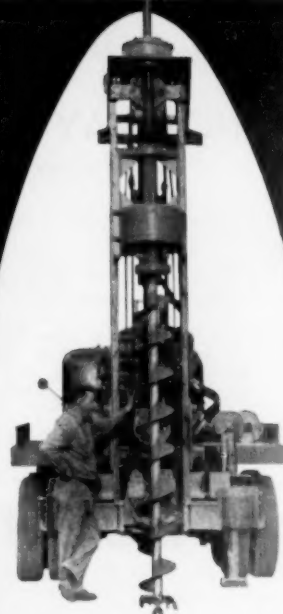
**Area** ..... 15,450 square miles  
**Capital** ..... The Hague  
**Chief Mineral Product**—Salt.

During 1954 Royal Netherlands Salt Industry produced 513,000 tons or 12 percent more salt than in the previous year in her concessions near Hengelo in Overysel. During the year the company obtained a concession with an area of 2,825 hectares in the northeast of the

**Currency Unit** ..... Guilder  
**Value** ..... \$0.2643

province Groningen. Here a salt deposit was discovered with a thickness of at least 600 meters at a depth of 400 meters. The distance of only 25 kilometers from the harbor Delfzyl makes it very attractive to erect a soda plant near this harbor. The brine will be pumped to the plant in a pipe line. In this connection a new company, Neder-

**NEW HEAVY-DUTY  
McCARTHY DRILL**  
HEAVY  
RUGGED  
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## Europe

landsche Soda Industry, has been established with a capital of 30,000,000 guilders.

Koninklyke Nederl, Hoogovens & Staal-fabrieken and its associated company, N. V. Breedband, produced the following in 1954: 609,000 metric tons of pig iron (591,000 t. in the previous year), 682,000 tons of raw steel (635,000 t.), 234,000 tons of plates (227,000 t.), 404,000 tons of sheet (289,000 t.) and 44,000 tons of shipplates (70,000 t.).

Mekog Coy at Ymuiden and Norsk Hydro Elektrisk Kvaestof of Oslo joined hands in erecting a pilot plant at Ymuiden to study the production of potassium salt from sea water. Oost Borneo My obtained a preferential right for the exploration of ores within the southern part of South Limburg.

## NORWAY

Area ..... 124,710 square miles  
Capital ..... Oslo  
Currency Unit ..... Krone  
Value ..... \$0.1405  
Chief Mineral Products—Iron, pyrite, copper, molybdenum.

Production was about the same during 1954 as in 1953, which was a record year for Norwegian mining.

Iron ore production was hindered somewhat by storage limitations. A/S Sydvaranger, Fosdalen Bergverk A/S and Rodsand Iron mines conducted geophysi-

### Norwegian Production of Metals and Minerals in Metric Tons

Commodity	1952	1953	1954
Iron ore*	769,696	1,054,600	1,060,485
Ilmenite Ore	118,000	128,100	149,185
Pyrites Ore†	712,616	744,855	786,719
Copper Ore	23,315	24,763	26,672
Zinc Ore	11,773	11,127	11,493
Lead Ore	690	869	1,112
Molybdenum Ore	213	241	230
Columbium Conc. (Soevit conc.)	—	—	80
Copper	3,500	4,000	3,995
Copper (Skjaersten)	14,328‡	13,250	12,252
Sulphur††	104,788	103,335	99,282
Graphite	4,100	3,000	3,000
Pig Iron (Electric)	58,100	—	—
Aluminum	52,849	—	—

\* Includes titaniferous ore. † 280,030 tons of the above figure are smelted for sulphur and copper production. ‡ About 33 percent copper. †† Includes production from pyrite.

cal prospecting and drilling during the year. Sydvaranger expects to export about 500,000 tons to West Germany, 200,000 tons to the United Kingdom, and to sell 50,000 to 60,000 tons to Norsk Jernverk A/S. Production for 1955 for Sydvaranger is estimated at 800,000 tons. A new iron works constructed by Norsk Jernverk is expected to increase pig iron production in Norway sufficiently to satisfy domestic steel and iron needs. The new plant is located in the Dunderlandsdal valley where Sydvaranger and Rana Mines (Norsk Bergverk) have conducted prospecting operations which have netted more than 1,000,000 tons of ore in the past few years.

Pyrites production rose about 40,000 tons. Skorovas Gruber A/S produced 140,000 tons. Favorable prospecting was carried out at Vaddis in northern Norway, and development of a new pyrites

lode was begun at Roros. The old Valralsde mine in southern Norway was re-activated during the year. Orkla Metal A/S has constructed a new plant designed for a capacity of 15,000 tons.

## SWEDEN

Area ..... 173,426 square miles  
Capital ..... Stockholm  
Currency Unit ..... Krona  
Value ..... \$0.1935  
Chief Mineral Products—Iron, pyrite, copper, lead, zinc.

The continued mechanization of Swedish mining operations during 1954 was characterized by new central hoisting devices, partly by using vertical shafts

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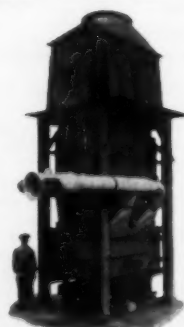
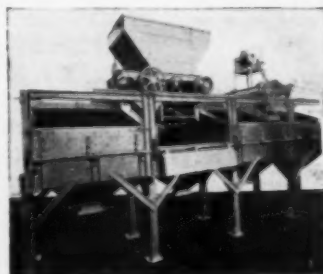
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## Europe

with high head frames and big loading pockets, partly by changing to conveyor systems. The underground timbering has been gradually replaced by roof-bolting. In order to establish good engineering design and sufficient ventilation in the mines the mining companies founded an office with ventilation service for dust- and air-metrical studies and for making designs of new ventilation equipments.

In the concentrating plants the number of upeps mills has been enlarged, and use of the sink and float process for separating hematite ore as well as sulphide ore was increased. Increased building of iron sponge plants during the year resulted in many new pellets plants.

The Boliden Co. started a test drilling of lead ore at the Vassbo mine in the Idre field north of Dalecarlia. At Laisvall a long tunnel connecting the central shaft with the lead deposit on the western side of Lake Laisan was driven at a depth of 70 meters below the lake. The new concentrating plant at Boliden, which cost 25,000,000 crowns, was put in operation during the year. The plant has a capacity of 500,000 tons a year and is working the

ore not only from Boliden but also from the Renström, Långsele and Akulla mines. In the future the ore will be transported from the Långsele mine, at a distance of 5 kilometers, through the underground tunnel which is being driven. It is expected to be finished in 1956. From the other mines the ore will be hauled out by trucks.

Two hoisting shafts and extensive new buildings have been completed at Kiruna where Luossavaara-Kiirunavaara AB is carrying out underground mining operations. At Luossavaara hoisting and separating plants with an estimated capacity of 700,000 tons a year have been built. At Malmberget LKAB nearly has finished the new hoisting system with belt conveyors as well as the new surface buildings including the new pellets plant.

At Tuolluvaara in the neighborhood of Kiruna the new sorting plant with a production of 120 t/h was put in operation. Plants for sorting and pelletizing of middlings and fines with an estimated production of 120,000 tons pellets a year have been designed.

The iron sponge plant of the Gränges-

berg Company at Oxelösund is expected to be ready in the middle of 1956. In addition to existing plants at Stripa and Striberg, there are pilot plants at the Norberg and Bastkärn mines, where the Swedish Svensson-method with magnetite as the suspension medium is used.

At Rudgruvan, Fagersta, the new concentrating plant with a capacity of 120,000 tons iron ore concentrate a year was put in operation.

At Norberg the Norberg Gruvförening drove shafts for the designed central hoisting plants. Three existing hoisting plants will be combined and the iron ore will be hauled out by belt conveyors from the mutual crusher at a depth of 300 meters.

## SPAIN

Area . . . . . 195,504 square miles

Capital . . . . . Madrid

Currency Unit . . . . . Peseta

Value . . . . . \$0.0915

Chief Mineral Products—Mercury, iron, lead, zinc, potash.

Production in the Spanish mining industry was, as a whole, greater than 1953, and mining activities developed normally in spite of the decrease in prices of metals. The prospects for 1955 are good.

Lead production reached a record 56,000 tons. The greatest part of this in-

Production and Export of Swedish Mineral Products  
in Metric Tons for 1952, 1953, and 1954

Commodity	1952		1953		1954	
	Production	Export	Production	Export	Production	Export
Iron ore	17,000,000	15,700,000	17,130,000	14,553,000	15,416,000	14,083,000
Pyrite	402,000	10,400	386,291	12,000	398,235	10,448
Lead conc.	27,400	12,000	33,954	8,346	40,372	10,110
Zinc conc.	66,600	81,000	78,583	76,393	103,435	110,356
Copper conc.	47,100	—	52,679	—	53,476	—
Tungsten conc. (60% WO <sub>3</sub> )	435	—	440	—	450	—

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## Europe

crease was due to the second washing of refuse dumps which was made possible by the installation of modern flotation plants. The production of iron pyrites in 1954 was 1,730,000 tons as against 1,600,000 in 1953. A small demand limited production. Blister copper production reached 5,878 tons. A plant to treat pyrite ashes in the Siderurgical exploitation of Aviles has been planned. The zinc industry produced 22,800 tons.

Iron ore mined in 1954 was 4,040,000

tons, with 928,000 tons produced in Morocco. Demand is still very great. The tin mining industry was less active, due to the local prices. Output was 830 tons.

Wolfram production was similar to that of 1953 when 2,538 tons were produced. The fall of prices caused the paralyzation of many small mines.

Export of mercury was 43,700 flasks, the greatest part of which went to America. In the mines of Almaden a new shaft is being bored to 500 meters.

decrease in profit was due to the fall in the tin price coupled with an accompanying rise in wage rates and fuel costs. During the period covered by the accounts the average price of tin at £655 per ton was about £300 lower than the average price for the preceding year. Tonnage of ore mined was 57,445 from which some waste was handpicked, leaving 54,930 tons milled. This yielded 682.3 tons of 65 percent tin concentrate, representing an average recovery of 27.82 pounds of concentrate (at 65 percent Sn) per long ton, which was some 3 pounds higher than in 1953.

At South Crofty mine, situated near Camborne, Cornwall, the output of tin was much the same as in 1953. The new pumping installation has been almost completed. In the accounts published last June, a loss of £56,586 was shown although the tonnage crushed increased by 7,958 tons. Despite some increased output the concentrate realized £245,878 compared with £303,641 in 1953 due to the fall in the metal price. During the first five months of 1954, 25,234 tons of ore were milled and at this rate the annual output would be over 60,000 tons. This increased figure together with the expected saving in pumping costs was expected to put the mine on a reasonable footing. The grade given in the company's report was 22.96 pounds of concentrate per long ton.

The subsidiary Great Western Ores Ltd., operating the Castle-an-Dinas mine, provided only 29% tons of wolfram. Here the main shaft has been sunk and considerable development as well as stopping carried out on the eighth level which is 478 feet from surface.

Elsewhere in Cornwall Minerals Recovery Ltd., working beach sands near Camborne, continued a small output throughout the year. Experimental work was carried out with the new Holman Screen and vibrating classifier with a view to obtaining a degree of pre-concentration on the beach before milling.

In a report published by the Geological Survey, it is stated that although the reserves of uranium in the country are insufficient to warrant the erection of a plant to treat the ore, they are too large to be dismissed as of no account. Almost the whole of the known resources are in Devon and Cornwall. Mine dumps in this district have been subjected to a comprehensive survey as well as some exploration at South Terrace near St. Austell, Cornwall, where about 5,000 feet of diamond drilling was undertaken. No new deposits or extensions of the old ore-body were found. A new deposit was located at Wheel Bray on Bodmin moor where some development work has now been started.

Lead and zinc production was restricted to three mines in North Wales and two in England. In Wales the Halkyn District United Mines in Flintshire continued to produce and develop. The production of both lead and zinc was increased to 2,676 tons of lead concentrate and 456 tons of zinc concentrate, while limestone sales were maintained at a satisfactory level. This lead production was the highest since the mine resumed operation in 1947. Also, the ore reserves were increased, and a new lode cut in the main drainage level cross-cut.

Two other mines are operating in North Wales, the Parc mine in which Johannesburg Consolidated Investment

## UNITED KINGDOM

Area ..... 94,279 square miles

Capital ..... London

Chief Mineral Products—Iron, china, clay, gypsum, tin, fluorspar, lead, barite.

Currency Unit ..... Pound Sterling

Value ..... \$2.82

There was little change in the mining situation during 1954. Production of iron and clay increased but otherwise, mineral output remained fairly static.

Production of iron and steel increased by nearly as much as in 1953, 911,000 tons or just over 5 percent, and it is still rising. It would appear that the industry is heading for new record outputs. In order to achieve this figure there has been an increase of over 600,000 tons in the import of foreign ore, as home produced ore only yields a small proportion of the total requirements. In November the annual rate of production had already passed the 19,500,000 ton target for the year and the steel works were needing

every ton of basic iron so that engineering foundries found themselves so short of low and medium phosphorous iron that they were using hematite and refined grades as substitutes. The demand for British steel, which next to Australian, is the cheapest in the free world, is increasing more rapidly than production and although further planned expansion should ultimately prove adequate there is an immediate shortage.

The larger of the two tin concerns, Geevor Tin Mines Ltd., showed an operating profit of only £53,074 against £115,426 the previous year in their accounts for the year ending March 31, and which were made public in August. This



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Co., is interested, and the Trecastel Mine, both in the Conway Valley.

In Scotland the only metalliferous mining was around the Lead hills district of Lanarkshire where the Lowland Lead Company, a joint venture of Rio Tinto and the Siamese Tin Syndicates, started unwatering operations in 1952. Since that time a great deal of exploration has been carried out involving a program of geophysical prospecting as well as underground sampling.

A sharp increase in exports coupled with the prosperity of the paper industry at home is reflected in the results of English China Clays which showed a group trading profit of £2,311,047 compared with £1,601,808 last year. The group net profit amounted to £1,109,089 of which £1,082,403 was attributable to the parent company compared with £462,793 and £363,146 last year.

## YUGOSLAVIA

Area ..... 99,411 square miles

Capital ..... Belgrade

Currency Unit ..... Dinar

Chief Mineral Products — Iron,  
Value ..... \$0.00333

bauxite, lead, copper, zinc, pyrite, chromite.

Lead and zinc ore production remained on the level of 1953, but the ore was poorer. Lead production was 6 percent lower and zinc production was also down 6 percent, due to a power shortage during January and February. The main ore producers are Trepča (Serbia), Mežica (Slovenia), Zletovo (Macedonia) and Suplja Stena (Montenegro). Mežica installed a Heavy Media Separation Western Machinery Company plant during the year. The Celje zinc-smelters (Slovenia) erected a new sulphuric-acid plant. The electrolytic zinc plant at Šabac (Serbia) had not started production by the end of 1954 due to delays in power delivery.

Copper production decreased 3 percent because of power shortage. Big scale development of the Majdanpek ore body (Serbia) and reconstruction of the Bor smelters should gradually increase copper production by 25,000 tons per year. This \$100,000,000 project was approved but postponed for at least one year because of a capital shortage. The new copper and brass rolling plant at Sevojno and the new cable factory at Jagodina (Svetozarevo), both in Serbia, were completed and started production in the autumn of 1954.

Antimony ore production increased 23 percent and metal production 10 percent. The new concentrator at Bratina in West Serbia works regularly now, delivering concentrates by ropeway to the Zajača smelters. The pilot plant for the treatment of concentrates by the amalgam process near Split, Dalmatia, is being tested.

Mercury production at Idria, Slovenia remained at the 500 ton per year level it has maintained since 1950. A new tramway and concentrator are being constructed.

Bauxite production increased 47 percent to supply increased home consumption as well as export demands. The new

plant at Kidričevo, Slovenia started alumina production in June and aluminum production in October.

Chromite production decreased 2 percent. Part of the output is being consumed by the new refractory plant "Magnochrom" at Kraljevo (Rankovićevo), Serbia; part of the chromite concentrates is being exported. The sodium-bichromate factory near Skopje, Macedonia is completed. Near Diakovica,

South Serbia a new chromite concentrator started operations.

Iron ore production increased nearly 40 percent, to meet growing home consumption. The first of the three 600 ton blast furnaces at Zenica, Bosnia started production in September. Yugoslavian pig iron production increased 32 percent and steel production 20 percent. At Store, Slovenia a low electro-blast furnace started operations in August.

Metric Tons of Ore Mined in Yugoslavia in 1951, 1952, 1953, and 1954

Ore	1951	1952	1953	1954
Lead-zinc	1,118,590	1,203,764	1,432,100	1,484,522
Copper	1,173,199	1,264,998	1,343,563	1,298,860
Antimony	55,088	74,594	61,450	75,258
Bauxite	453,357	577,196	462,309	680,597
Chromite	99,639	107,222	126,961	124,480

Metric Tons of Metal Produced in Yugoslavia in 1951, 1952, 1953, and 1954

Metal	1951	1952	1953	1954
Refined lead	60,068	67,180	70,796	66,729
Zinc	13,223	14,463	14,549	13,644
Blister copper	32,011	32,819	31,190	30,295
Electrolytic copper	14,004	21,390	27,764	26,946
Antimony	1,229	1,329	1,410	1,552
Mercury	505	504	492	498
Aluminum	2,828	2,563	2,792	3,496
Bismuth	88	99	98	110
Silver	94	80	95	88

Metric Tons of Iron Ore Mined, Pig Iron and Steel Produced in Yugoslavia in 1951, 1952, 1953, and 1954

Commodity	1951	1952	1953	1954
Iron ore	581,352	676,010	794,017	1,110,743
Pig iron	248,000	272,884	269,748	356,000
Steel	434,030	442,354	514,537	616,298

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# AFRICA

## ALGERIA

Area ..... 847,552 square miles  
Capital ..... Algiers  
Chief Mineral Products—Iron, phosphate, lead, zinc, antimony.

Mining activity in Algeria during 1954 showed a net gain as compared with the preceding years, with the exception of iron ore, which evidenced a slight drop.

Iron ore production showed a slight fall in 1954, when the sales dropped to 2,900,000 tons, as against 3,213,500 tons in 1953. Ore extracted was 2,920,000 tons.

The Ouenza-Boukhadra group furnishes two thirds of the iron ore production. In addition to the vein of Djebel Ank, studied by the Société des Phosphates de M'Dilla, the search for new veins has brought about the discovery of the vein of Gara Djebilet, 150 kilometers south-east of Tindouf, where the sedimentary mineral, which is semi-phosphorous, has a content of 54 to 55 percent iron.

Because of their size and distribution the Algerian lead and zinc mines are very sensitive to the variations of the markets. These, after a slight drop at the beginning of the year, were favorable during 1954, and the industry benefited, accordingly. The production of lead ore

Currency Unit .... Algerian Franc  
Value ..... \$0.0022

was 15,000 tons. That of blende exceeded 37,000 tons, and calamine reached 10,000 tons. The Société Algérienne du Zinc expanded its activities along the extension in Algeria of the Moroccan vein of Bou-Beker. All Algerian lead and zinc ores are exported.

In spite of the considerable fluctuations of the market, the production of antimony ore (stibine and derived oxides) showed a net increase, 8,000 tons in 1954, as against 6,300 tons in 1953.

The annual production of phosphate is stabilized around an average of 600,000-700,000 tons per year. The year 1954 marked a high point, with 740,000 tons. The greater part of the ore is exported. Between 80,000 and 100,000 tons are used locally and are transformed into superphosphates. The veins exploited are found in the regions of Tebessa (the Kouif vein) and Sétif (M'Zafta). To the South of the Kouif vein, which will soon be exhausted, the Cie des Phosphates de Constantine is equipping the Djebel Onk vein, where the ore has a content of 55 to 65 percent.

## BELGIAN CONGO

Area ..... 905,516 square miles  
Capital ..... Leopoldville  
Chief Mineral Products—Uranium, copper, cobalt, tin, diamonds, zinc, gold, manganese.

Currency Unit .... Belgian Franc  
Value ..... \$0.0198

Mineral production of the Belgian Congo for 1954 was greater than 1953. Further developments at the Union Minière du Haut Katanga were possible with the increase in available hydro-electric power. The company's third 30,000 KVA unit was started in March, and a fourth one is being constructed. The Sogefor provided 955,000,000 KWH compared with 790,000,000 in 1953.

The copper production was increased from 214,148 metric tons in 1953 to 223,750 tons, with a comparative improvement of some byproducts such as zinc and cobalt.

Zinc which was formerly exported to Belgium as crude concentrates is now completely treated in the metallurgical plant of the Société Metallurgique du Katanga at Kolwezi which started operations in 1953 and reached its full capacity in June 1954.

Tin production in the Congo slightly decreased, corresponding to 12,799 tons of metal, but the production of mixed cassiterite-tantalite-columbite and of pure columbite-tantalite was increased considerably. The cassiterite production of the Geomines company at Manono is now divided at 52.2 percent from the soft altered rocks, 40 percent from the underlying partly altered rocks and only 8.8 percent from the "hard rock."

The outlook of the mining industry for 1955 is very good except for tin, as it is expected that the International Tin Agree-

ment will come into force during the year and may decide upon a world wide production reduction. For this reason and on account of the high price now paid for columbite-tantalite all the tin producers are making a great effort to develop their deposits of these minerals and to increase their recovery from the mixed tin and columbite-tantalite ores.

### Metal and Mineral Exports from Belgian Congo and Ruanda-Urundi in Kilograms During 1953 and 1954<sup>1</sup>

Commodity	1953	1954
Silver	1,099	1,146
Cobalt, granules 94%	4,649,897	5,052,049
Copper-cobalt, white alloy	8,793,960	8,056,170
Copper		
Wire bars 99%	94,044,407	101,658,266
Ingot bars 99%	9,395,214	12,590,400
UMPCP 97%	105,199,098	112,517,093
Tin		
Metal	2,903,609	2,377,338
Concentrates	20,412,612	15,208,826
Tantalum-Niobium concentrates	337,199	532,053
Tantalite concentrates	26,150	4,952
Tungsten concentrates	1,023,258	1,282,808
Zinc		
Crude concentrates	93,961,980	101,960,470
Roasted concentrates	31,397,100	18,606,540
Miscellaneous	194,481	65,098
Zinc metal	5,831,081	29,980,102
Gold	12,734	11,371
Cadmium	31,925	30,889

1. No returns are released on production or exports of uranium and radium.

## EGYPT

Area ..... 386,000 square miles  
Capital ..... Cairo  
Currency Unit ... Egyptian Pound  
Value ..... \$2.88  
Chief Mineral Products—Phosphate, manganese, talc, gold.

In Egypt during 1954 the producing phosphate rock mines were Kosseir and Safaga on the Red Sea coast and Sebaiya in the Nile Valley. The production of phosphate for 11 months was 490,470 metric tons, this is more than the total 1953 production of 484,126 metric tons.

The Um Bugma Manganese mines and adjoining area in Sinai produced during 11 months in 1954, 5,911 tons of chemical grade manganese ore and 160,088 tons of metallurgical ore, while shipments amounted to 195,352 tons. The production for 1953 was 3,426 tons chemical ore and 280,838 metallurgical ore.

1954 saw the commencement of a new iron and steel industry in Egypt. The iron ore will be obtained from the vast Asswan deposits in Upper Egypt, while the iron and steel works are to be erected at Helwan, 30 kilometers south of Cairo.

Research work by the Department of Mines and Geological Survey of Egypt is being carried out in the Eastern Desert, with special stress on lead, zinc, black sands, gold, and general exploration work for all minerals.

The mining law of the country is being revised with a view to encourage more capital for mining enterprise.

## FRENCH MOROCCO

Area ..... 172,104 square miles  
Capital ..... Rabat  
Currency Unit ..... Franc  
Value ..... \$0.025  
Chief Mineral Products—Manganese, cobalt, phosphate, lead, zinc.

The modernization of the plant of the Office Chérifien des Phosphates, mainly carried out from 1948 to 1952 made it possible to increase the production of Moroccan phosphate from 3,226,700 tons in 1948 to 4,716,800 tons in 1951. Following a certain decrease in sales, extraction became stabilized at an annual average of 4,000,000 tons in 1952 and 1953. A very important increase in production due to a rise in the market demand featured 1954, with the record output of 5,019,500 tons. Some 70 percent of the production comes from Khouribga and is shipped through Casablanca; 30 percent is extracted in Louis Gentil and is exported through Safi.

In April 1954 the Société Safichimie was created to study the problem of the building, at Safi, of a sulphuric acid plant which would also produce superphosphates, using as raw materials the gypsum



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from Sidi Tijji and the phosphate from Louis Gentil.

The production of lead ore, which has been constantly rising since the end of World War II, increased from 39,180 tons in 1948 to 115,000 tons in 1952. After a slight recession in 1953 (110,500 tons), 1954 almost equalled the 1952 figure, with 114,420 tons.

The production of zinc ore in Morocco rose from 5,580 tons in 1949 to 64,980 tons in 1953 and 62,870 tons in 1954.

Three large mines: Bou Beker, Touissit, and Aouli-Mibladen, were responsible for 75 percent of the production of lead, and 80 percent of zinc. Bou Beker alone produced 40,460 tons of lead and 49,840 tons of zinc. Among the medium sized mines which are included in the total output figures are: MFis, Haut-Guir, Kaiba, Erdoux, Assif-el-Mal, and Toundout.

All the zinc is exported, as well as 75,000 tons of lead. Since 1951 the output of Bou Beker concentrate has been treated by the Oued el Heimer smelter which recovered 26,700 tons of lead metal in 1954. The smelter is equipped with 10 Newman furnaces and a plant for extracting silver which recovered 36,000 kilograms of silver in 1954. The installation of a water-jacket furnace permits the treatment of the grey clinker resulting from the smelting of the ores and concentrates in the Newman furnaces.

Mine development at Bou Beker has revealed a tonnage of zinc ore greater than that of lead ore, and the construction of a zinc smelter is planned.

The Moroccan manganese mines are grouped in two principal regions: one being eastern Morocco (Bou-Arfa, 70,000 tons), and the other being the Anti-Atlas region and the southwest part of Morocco. In this last-named zone, apart from the two large mines of Inini (200,000 tons) and of Tiouine (45,000 tons), there are a large number of smaller mines among them being the Cie Minière d'Agadir (16,000 tons).

The total Moroccan production, which had followed a rising curve during the course of recent years, rose from 389,600 tons in 1951 to 439,100 tons in 1953. In 1954 it was off to 400,000 tons. The entire production was exported. The majority is sent to France, 230,000 tons, while 65,000 tons were shipped to the United States.

The cobalt ore produced by the Société Minière de Bou-Azzer et du Graira is in the form of arsenides of cobalt containing 12 percent cobalt and small quantities of nickel and gold. Production, which is subject to the fluctuations of demand, has nevertheless, made constant progress upward: 3,500 tons in 1950; 6,200 tons in 1951; 9,100 tons in 1952; 6,120 tons in 1953, and 7,360 tons in 1954. In 1954 exports were made to France (3,500 tons), the United States (3,600 tons) and Canada (950 tons).

The production of Moroccan chalcopryrite rose from 2,950 tons in 1952 to 3,890 tons in 1953, but dropped to 2,530 tons in 1954. The greater part of the ore comes from the mine of Azegour, which produced 1,293 tons in 1952, 1,968 tons in 1953, and 2,166 tons in 1954. The Société des Cundafa carried on methodical surveys of its deposits in Ouchedenne and Ounein. In the Djebel Sarho region, in the Bou Skour vein, evidence has been found of the certain existence of 13,000 tons, and the probable existence of 40,000

tons of metal, and there are possibilities of these reserves being extended.

At Djebel Klakh, 20 kilometers from Bou Arfa, the Société des mines de Bou Arfa has carried out survey work, and has set up a pilot washing plant. The ore will assay from 3 to 6 percent Cu (chalcopryrite and chalcocite).

The tungsten investigations which were begun in 1950 have resulted in the putting into operation of the pilot mill at Hassiane-el-Diab. The low rate of extraction has been slowed by the abrupt slump in the market price with only 42 tons in 1951; 22 tons in 1952; 18 tons in 1953, and 16 tons in 1954. The Société des Montmins is actively pursuing methods of improving recovery. The company Le Molybène envisages the gravimetric recovery of scheelite from the Azegour mine.

At Djebel Mansour, the mine of Tiout produced, in the year 1954, 111 kilograms of gold (79 kilograms in 1953) and 250 kilograms of silver (192 kilograms in 1953). The treatment of the cobalt ores from Bou Azzer makes it possible to recover more than 100 kilograms of gold per year.

The silver plant of the Oued El Heimer lead smelter recovered 36,000 kilograms of silver in 1954 (31,000 kilograms in 1953) in the form of ingots and granulated metal.

Although many veins of asbestos are known, only the mine of Bou Offroch (near Bou Azzer) was active during 1954, with an output of 540 tons. The deposits at N'kob (Siroua Sud) and at Bouznour-nak (Siroua Nord) would be capable of providing an appreciable tonnage.

## FRENCH EQUATORIAL AFRICA

Area ..... 912,049 square miles  
Capital ..... Brazzaville  
Currency Unit ..... Franc  
Value ..... \$0.025  
Chief Mineral Products—Diamonds, gold, lead, zinc.

The production of gold, which had attained a record figure in 1941, with 2,983 kilograms, has been decreasing slowly but continually in French Equatorial Africa except for a slight upsurge in 1953. Production for 1954 was 1,390 kilograms.

As far as diamonds are concerned, the year 1954 recovered the same production level as in 1952 with an output of 153,800.

The Cie Minière du Congo Français abandoned its zinc mining operations. Its output of lead ore reached 7,000 tons in 1954.

The year 1954 was marked by the intensification of surveying and prospecting work for gold in Moyen-Congo and Gaboon, diamonds in Oubangi-Chari, copper in Moyen-Congo, and potash in Gaboon. Surveys and tests were carried out on an extensive manganese deposit near Franceville (Gaboon).

## FRENCH WEST AFRICA

Area .... 1,814,810 square miles  
Capital ..... Dakar  
Currency Unit ..... Franc  
Value ..... \$0.0058  
Chief Mineral Products—Bauxite iron, phosphate.

The Société Bauxites du Midi produced 500,000 tons of bauxite at Iles de Los, French Guinea in 1954. The entire output was exported to Canada. Also in French Guinea, at Kaloum, the Cie Minière de Conakry mined more than 580,000 tons of iron ore. The ore is exported through the mining port of Conakry, which was specially built for this purpose.

In Mauritania La Société des Mines de Fer de Mauritanie (MIFERMA) continued its survey of the Fort-Gouraud deposits. The ore contains an average of 65 to 68 percent Fe and very little silica. The area surveyed is estimated to contain more than 100,000,000 tons.

In the French Niger in the mountainous Air Massif the Société Minière du Dahomey-Niger mined 120 tons of tin in 1954. This included approximately 10 tons of mixed cassiterite-wolfram ores.

A yearly production of 150,000 tons of calcium phosphate is anticipated by the Société Péchiney from its Lam Lam mine in Senegal. The firm produces aluminium phosphate at Pallo, where the annual production potential is estimated at several hundred thousand tons. The calcium phosphate was exported in the form of superfine phosphate (Bayliss). Production was suspended in October 1953, after having reached the figure of 45,800 tons in the first nine months of that year, due to the constant increases in the local production costs, which unfortunately coincided with a period of recession in the world markets. Production for aluminium phosphate was 75,000 tons in 1954.

In Mauritania, the Société des Mines de Cuivre de Mauritanie (MICUMA) completed its study of the possibility of putting into production the cupiferous veins of the Guelb Moghrein, near Akjouit. An annual production of 20,000 tons of metallic copper is anticipated. A pilot plant completed in July 1954 has a capacity of 110 tons of ore per day. Within two years this figure can be increased to 4,000 tons per day.

## GOLD COAST

Area ..... 96,000 square miles  
Capital ..... Accra  
Currency Unit .... Pound Sterling  
Value ..... \$2.80  
Chief Mineral Products—Gold, manganese, diamonds, bauxite.

In 1954 the production of bauxite from the Kanayombo deposits in the Awaso district exceeded all expectations, 164,235 tons having been exported, 115,075 in 1953. The new plant and equipment (by Fraser & Chalmers) and the haulage equipment (by British Ropeway Engineering) was installed during 1954 and is now

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Gold Coast Mineral Exports and Value in 1951, 1952, 1953, and 1954<sup>1</sup>

Commodity	1951		1952		1953		1954	
	Quantity	£ Value	Quantity	£ Value	Quantity	£ Value	Quantity	£ Value
Bauxite <sup>2</sup>	141,000	£247,000	74,368	£137,581	115,075	£201,283	156,956	£276,258
Manganese <sup>2</sup>	832,000	7,416,000	794,192	8,332,847	745,990	8,722,222	423,038	4,812,690
Gold <sup>3</sup>	698,676	8,564,000	711,096	9,178,889	730,155	9,390,584	724,703	9,005,506
Diamonds <sup>4</sup>	1,632,000	5,703,000	2,051,496	5,347,026	2,165,345	3,667,206	1,963,670	3,719,712

1. First 11 months. 2. Metric tons. 3. Troy ounces. 4. Metric carats.

in full operation. A further increase in production during 1955 can therefore be predicted. Preliminary work by British Aluminium on a new bauxite mine in the Eastern District commenced during 1954 and is to continue in 1955. The site is close to the Tema port. The first blast in the construction of the breakwaters for Tema harbor was fired jointly on February 9, 1955 by the Governor (Sir Charles Arden-Clarke) and the Prime Minister (Dr. Kwame Nkrumah).

The total exports of manganese ore during 1954 at 460,000 tons compares with 745,990 tons in 1953. Almost all of this tonnage came from Nsuta, the Hotopa mine having produced only 4,000 tons. The new American Cyanamid Company's heavy media separation plant (manufactured under license by Fraser & Chalmers in England) has been installed and is expected to come into service in the near future. The grade of the ore is unchanged, the manganese content being approximately 48 percent after the ore has been treated in the washing plant.

Gold production in 1954 was 787,075 ounces against 730,963 in 1953—a rise of 8 percent. Quartz reef accounted for 543,973 ozs. (511,373). Banket reef 213,835 ozs. (188,838) and Alluvial 29,267 ozs. (30,762). The new dredge (No. 2) operated by the Bremang Gold Dredging Company Limited started digging in February 1954 on the Extended Areas (Offin River) and is working satisfactorily.

Output of diamonds fell slightly in 1954 to 2,135,141 carats (2,180,728 in 1953). Nevertheless, the Consolidated African Selection Trust increased its production and, for the first time, output exceeded 1,000,000 carats. The actual figure was 1,000,162 (930,793 in 1953). African producers accounted for 1,134,979 carats in 1954 (1,249,935 in 1953), but it is very probable that part of the African output did not reach the recognized markets and is therefore not included in these figures.

The world market for industrial diamonds, which form the bulk of the Gold Coast output, showed a substantial improvement towards the end of 1954 and prices reached a high level.

## KENYA

Area ..... 224,960 square miles  
Capital ..... Nairobi  
Currency Unit ..... Pound  
Value ..... \$2.80  
Chief Mineral Products—Soda ash, gold, kyanite.

Approximately one-third of the total area of Kenya country has now been covered by geological mapping, some areas have been mapped in greater detail than others.

The Magadi Soda Company continues to be the most important mineral producer and there is reason to hope that production will increase in the future.

Macalder-Nyanza Mines, operated by the Colonial Development Corporation, is engaged in installing a plant to enable regular production of high grade concentrate for shipment to the Kilembe Mines smelter at Jinja, Uganda. In addition to the mining and metallurgical installations it is proposed to construct a hydroelectric power plant.

A new development in 1954 was the production of high grade crucible flake graphite by East African Minerals (Graphite) Ltd. This company has established a firm market for its product both in England and the United States. Several other companies are exploring the possibilities of graphite production in Kenya.

Gold production continued to decline although several small producers made handsome profits.

Throughout 1954 the Mines and Geological Department continued to prove the commercial possibilities of the columbium and rare earth deposit at Mrima Hill in the Coast Province. A very substantial degree of finality was reached concerning values and tonnages, both of which are high, though much research work remains to be done from the extraction and metallurgical view point.

Further indications of vast tonnages in somewhat similar deposits in another part of Kenya are now under investigation by the Department.

## MADAGASCAR

Area ..... 241,094 square miles  
Capital ..... Tananarive  
Currency Unit ..... Franc  
Value ..... \$0.0058  
Chief Mineral Products—Graphite, phlogopite mica, quartz.

Madagascar produces important quantities of graphite in crystals and in granulated form. During the Korean War, the demand was great, and the producers speeded up efforts to modernize their mining methods. Demand has fallen off since then, and production was only 11,500 tons in 1954.

There has been a constant recession in the production of phlogopite mica: 816 tons in 1953, and 500 tons in 1954. The phlogopite has a difficult struggle in the market with the muscovite mica of India and the synthetic substitute products. Reserves built up by the users have not yet been entirely consumed, and the sale of splittings, mainly to the United States of America, was considerably slowed down.

The market for beryl is controlled by the government Atomic Energy Commission, which, reserves the output for the French industry. In recent years production has been rising: 486 tons in 1950, 530 tons in 1951, 395 tons in 1952, 468 tons in 1953, and 600 tons in 1954.

## NIGERIA

Area ..... 372,674 square miles  
Capital ..... Lagos  
Currency Unit .... Pound Sterling  
Value ..... \$2.80  
Chief Mineral Products—Tin, columbite.

Tin continued as the main mineral product of Nigeria in 1954, but columbite is challenging and likely to take the lead in 1955. The lower tin output in 1954 than in 1953 was due to producers concentrating on an increase in their colum-

Mineral Production in Kenya and Value in Pounds, 1952, 1953, and 1954<sup>1</sup>

Commodity	1952		1953		1954 <sup>1</sup>	
	Quantity	Value	Quantity	Value	Quantity	Value
Concentrates, mixed copper and zinc <sup>2</sup>	2,400	60,000	—	—	—	—
Diatomite <sup>2</sup>	5,923	63,670	4,328	60,000	3,258	39,169
Gold bullion <sup>2</sup>	14,800	134,500	8,050	100,000	6,308	77,716
Kyanite (raw) <sup>2</sup>	500	4,700	5,434	129,992	4,018	96,432
Gypsum <sup>2</sup>	1,593	3,584	—	—	—	—
Salt <sup>2</sup>	14,835	124,615	18,091	142,918	17,067	143,609
Soda ash <sup>2</sup>	118,371	1,219,221	76,032	790,732	96,074	1,249,362
Asbestos <sup>2</sup>	—	—	—	—	159	2,596
Graphite <sup>2</sup>	—	—	—	—	310	17,934

1. Preliminary. 2. Metric tons. 3. Fine ounces.

Nigerian Mineral Exports and Value for 1951, 1952, 1953, and 1954

Commodity	1951		1952		1953		1954	
	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value	Metric Tons	Value
Tin <sup>1</sup>	11,753	£8,974,372	10,575	£7,665,521	12,136	£7,078,014	10,309	£5,170,344
Columbite <sup>1</sup>	1,092	838,713	1,228	1,306,688	1,855	3,698,043	2,524	5,127,613
Tungsten <sup>1</sup>	46	35,736	19	30,839	14	15,735	7	4,470
Lead <sup>1</sup>	—	—	—	—	—	—	154	10,034
Zinc <sup>1</sup>	—	—	—	—	—	—	125	3,371
Tantalite <sup>1</sup>	—	—	—	—	—	—	5	15,725

1. Ores and concentrates.

## NORTHERN RHODESIA

Area ..... 290,320 square miles  
 Capital ..... Lusaka  
 Currency Unit .. Rhodesian Pound  
 Value ..... \$2.81  
 Chief Mineral Products—Copper,  
 zinc, lead, cobalt, vanadium.

bite production and, to a lesser extent, to the higher-cost producers suspending operations until the price of tin improves. The London Tin Corporation Ltd. (technical managers for Amalgamated Tin Mines of Nigeria) announced that prospecting was carried out by Banka drill, for both cassiterite and alluvial columbite, on 84 mining leases and 10 exclusive prospecting licenses. On mining leases 14,225 holes were drilled for a total footage of 282,999 and on exclusive prospecting licenses 1,436 holes were drilled for a footage of 35,795. A number of major items of both earth-moving and ore dressing equipment were received during the year together with pumping and workshop equipment.

The United Tin Areas of Nigeria Limited, in conjunction with Ribon Valley (Nigeria) Tinfields Ltd., bought Fobra Tin Limited, a company registered in Nigeria. It owns—in addition to its buildings, plant, dams and leats—tin and columbite areas comprising 1,319 acres under mining lease titles and under application, and 9,684 square miles under exclusive prospecting license. Additional tin and columbite areas, comprising 101 acres of mining leases and nine square miles under exclusive prospecting licenses, adjoining the other areas at Odegi, also were acquired. Satisfactory production of tin and columbite is already being achieved.

Another spectacular increase in production during 1954 brings the output to 2,524 tons; 1,855 in 1953; 1,228 in 1952; and less than 1,000 in 1951. And even more intensive efforts are to be made in 1955 to top the 3,000 ton mark.

London Tin Corporation Limited used power drills exclusively on the primary columbite investigation undertaken on behalf of Keffi Tin Company Limited. This latter company has been producing primary columbite with a pilot plant with gratifying results. Plans for the construction of a commercial plant of much larger capacity are being made.

The Bisichi Tin Company increased the capacity of its treatment and dressing plant considerably and much new equipment is being installed. This plant, in addition to treating the tin and columbite ores from Bisichi areas, also treats the ores mined from the Gold and Base Company's properties.

The Northern Rhodesian metal and mineral production and value are shown in the table for 1953-1954. There was an increase in value of total production of 2½ percent between 1953 and 1954 as compared to almost 20 percent between 1952 and 1953. The increase in value for 1954 is almost entirely due to increase in production of the major metals while metal prices remained comparatively steady. The total copper production increased by slightly over 1 percent but the cobalt production rose sharply both in quantity and value. In this connection, it is anticipated that the production of cobalt alloy will gradually fall with a corresponding increase in cobalt metal and cobalt carbonate output.

The increase in prospecting activity is reflected in the larger production of manganese ore. Mineral Search of Africa, a subsidiary company of Rio Tinto Company, discovered large manganese deposits near Chiwele, which is approximately 70 miles southeast of Ndola near the southern extremity of the Belgian Congo border.

Advances in underground operations by the established mining companies, have been the installation of underground crushers at Mufulira; improved recovery of pillars at Rhodesia Broken Hill by top-slicing or by sub-level development and ring-drilling; continued sinking of the sub-vertical shaft at Nkana. Roan Antelope Copper Mines have experimented successfully with a method of high-speed and high-tonnage stoping in individual blocks of ore. This has resulted in a saving in manpower and improved control of ground and rock stress. The new headframe to serve the South ore body section of Nkana mine is nearing completion. It is anticipated that this shaft will hoist

150,000 tons a month when in full production. At Nchanga the preliminary work is continuing on the development of the open pit mining, a program which will make use of the previously untreated Upper ore body.

There are three copper or copper-cobalt mines coming into production in the next few years.

Baluba, the least advanced of the three, continues its preliminary work, while Chibuluma Mines Ltd. is well advanced with development and will produce a copper-cobalt ore late in 1955 or in 1956. The surface crushing plant and concentrator are being built. At Bancroft, the No. 1 Shaft had been sunk 990 feet at the end of 1954 and No. 2 Shaft 730 feet. Three ventilation shafts are also being sunk. Pump chambers, stations and haulage ways have been started and production is scheduled for 1957.

Metallurgical techniques have been improved at Nchanga where a markedly better recovery of the oxide copper in ore has been noted. A comprehensive program of modifications and improvements is being carried out as the result of operating experience and it is expected that these will produce further increases in metallurgical efficiency. A scheme of further extensions to the metallurgical plant is envisaged. This is not aimed at further increase in copper production but is intended to ensure the continuance of the present rate with the lower grade ore which will be concentrated when the open pit mining, mentioned above, is started.

A start has been made on the new copper refinery and cobalt plant at Ndola for Rhodesian Selection Trust to treat Roan Antelope copper and Chibuluma copper-cobalt concentrates. Two additional roasters are being added to Rhokana Corporation's cobalt plant together with the necessary auxiliary equipment.

The new cadmium plant at Rhodesia Broken Hill is due to commence operations in 1955. Plans are underway for the uranium plant to treat ore from the Mindola section of Nkana Mine.

The outlook for 1955 in Northern Rhodesia is extremely promising although the start of the year has been marred by some labor unrest and a strike by the African Mineworkers Union.

## NYASALAND

Area ..... 38,000 square miles  
 Capital ..... Zomba  
 Currency Unit ..... Southern Rhodesian Pound  
 Value ..... \$2.80  
 Chief Mineral Products—Kyanite, corundum.

Mining activity in Nyasaland during 1954 was limited to kyanite quarrying at the Kyanite Development Project and to mining small amounts of crystalline corundum from indigenous diggings in the Mt. Tambani area.

General Refractories Ltd., of Sheffield, England, continued quarrying massive high grade kyanite at the mines of the Kyanite Development Project. Towards the end of the year a stage was reached where, due to narrow mineral bodies and relatively flat dip, quarrying will have to

Metal and Mineral Production in Northern Rhodesia in 1952, 1953, and 1954 and Value in Rhodesian Pounds

Commodity	1952		1953		1954	
	Quantity	Value	Quantity	Value	Quantity	Value
Gold <sup>1</sup>	2,435	£ 30,204	309	£ 3,817	178	£ 2,185
Silver <sup>2</sup>	312,940	90,971	—	—	38,279	11,623
Cobalt <sup>3</sup> (metal)	635	71,145	7,886	883,200	11,762	1,383,218
Cobalt <sup>3</sup> (alloy)	24,973	1,048,462	21,754	953,072	21,267	965,206
Cobalt <sup>3</sup> (other)	34	395	935	48,366	3,347	169,744
Copper <sup>3</sup> (bister)	200,808	45,373,431	210,061	51,749,000	204,975	48,007,900
Copper <sup>3</sup> (concentrates)	5,563	544,373	226	11,848	1,064	40,308*
Copper <sup>3</sup> (electrolytic)	111,555	26,463,604	152,520	38,263,875	173,636	43,132,746
Copper <sup>3</sup> (other)	63	17,607	—	—	—	—
Iron ore <sup>3</sup>	5,943	5,943	2,169	2,169	961	961
Lead <sup>3</sup>	12,600	1,740,500	11,510	1,047,093	15,000	1,445,688
Manganese ore <sup>3</sup>	3,926	6,321	7,129	39,824	16,754	128,046*
Selenium <sup>3</sup>	29,793	33,879	—	—	—	—
Tin <sup>3</sup> (concentrates)	15.69	8,632	9.80	4,958	1.47	587
Vanadium pentoxide <sup>3</sup>	75.97	56,976	—	—	—	—
Zinc <sup>3</sup>	22,890	3,79,975	25,330	1,897,030	26,550	2,075,193
Mica <sup>3</sup> (sheet)	35,800	18,937	16,439	4,841	6,464*	808*
Beryl <sup>3</sup>	7	995	4.86	690	1.25*	178*
Phyllite <sup>3</sup>	7,522	940	2,789	418	—	—
Total value		£79,429,381		£95,014,411		£97,567,961*

\* Preliminary, subject to adjustment. 1. Fine ounces. 2. Hundredweight. 3. Metric tons. 4. Tons ds.



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be replaced by underground mining and plans are being investigated.

However, considerable prospecting and development activity was carried out on the two carbonatite ring structures in Nyasaland. On Chilwa Island, Lake Chilwa, in the southeastern part of the country, a subsidiary of the London Tin Co. is investigating and developing a pyrochlore-bearing structure. Pyrochlore, an important columbium mineral, occurs here finely disseminated in certain zones of the carbonatite matrix. On the Kangangunde Hill, in the southern part of the country, the Mineral Research Syndicate continued investigation of a carbonatite plug in a ring structure mineralized with disseminated monazite.

### PORTUGUESE EAST AFRICA

(Mozambique)

Area . . . . . 297,731 square miles  
Capital . . . . . Lourenco Marques  
Currency Unit . . . . . Mozambique Escudo  
Value . . . . . \$0.0345  
Chief Mineral Products—Uranium,  
beryl, columbite, tin.

The interest in mining, revived during the last two years, continued through 1954; it was, however, limited mainly to prospecting, re-location of formerly abandoned mineral deposits, and staking of claims by small syndicates and individuals. There were no large-scale developments or mining activity. At the same time Mozambique's vast untapped mineral resources continued attracting many large mining groups. Mozambique enjoys a rather favorable position on the southeast African coast from the point of view of transportation, an abundant supply of cheap indigenous labor, and, above all, extensive areas showing considerable and varied mineralization.

Several large mining groups applied to the Portuguese government for exclusive mineral concessions covering areas of many thousands of square miles. Among the applicants is the South African Central Mining and Investment Corporation, the Swedish Bolidens Gruv AB, and the Union Carbide and Carbon Corporation of New York.

The Central Mining and Investment Corporation optioned a group of copper claims, staked prior to the Government reservation in the Tete District at Mt. Chidwa. This deposit was first discovered about 40 years ago by the field engineers of the Company of Zambesia following extensive ancient surface diggings. Until recently, the deposit was forgotten. The group has applied for the surrounding area as an exclusive mineral concession, since numerous ancient copper diggings and signs of extensive copper mineralization have been found over many hundreds square miles area.

The Mavuzi uranium ore mines at Tete did not come into anticipated production during the year owing to difficulties with the power plant. Through introduction of large capital it is expected that further mechanization of the production will take place in the near future and that a co-

ordination with the remaining 10 claim owners in the neighborhood will lead to large scale mining. The principal ore is davidite with a variable amount of  $U_2O_5$ , (usually 6.0 to 10.0 percent).

Several new discoveries of important minerals have been made during the year, and perhaps of particular interest might be in the future the columbite and euxenite deposits in the Porto Amelia district. At the same time a private party staked a large portion of Mozambique shore line from the border with Tanganyika southward to near Pebane for ilmenite and rutile; these minerals occur in considerable quantities in marine beach sands.

At the end of the year, the Portuguese government granted to Mr. A. V. Lillas of Bahamas, B. W. I. two exclusive mineral concessions covering an area of about 25,000 square kilometers. Large scale investigations of the iron and coal deposits in the Tete concession are to be started shortly. The iron ore was found to be high grade magnetite, and one ore zone was found by previous surveys to cover an area of 45 square kilometers. With the availability of limestone, coal, water power, and cheap Native labor in the area also with convenient railway transport lines it is believed that a large scale iron project could be established. The copper, gold, columbite, and tin deposits are to be equally investigated. These were the first exclusive mineral concessions which the Portuguese government granted, after a period of approximately 10 years, when the Empresa Mineira de Alto Ligonha obtained its concession.

It is believed, the Portuguese government will shortly propose new mining regulations covering the exploration of uranium ores, which has been closed since 1947. This closure did not affect such claims which were staked prior to the reservation. The newly established Portuguese Atomic Energy Commission will coordinate Portugal's requirements for fissionable materials with the exploration of mineral deposits and control the exports.

### SOUTHERN RHODESIA

Area . . . . . 150,354 square miles  
Capital . . . . . Salisbury  
Currency Unit . . . . . Rhodesian Pound  
Value . . . . . \$2.80  
Chief Mineral Products—Gold,  
chrome, asbestos, beryl, lithium  
ores.

Reviewing the mining activity in 1954, Southern Rhodesia had many significant and far fetching larger developments. showed an increase in production of many minerals, as compared with the last year; excepted these same minerals where continued falling demand and decrease in world's market prices caused recession.

Lithium minerals continued to boom during 1954 with continuously increasing production. Several unknown deposits were located during the year. Total number known now is 72. Large scale development was carried out on the giant pegmatite at Bikita, Fort Victoria district, by Bikita Minerals (Pvt) Ltd., (con-

trolled by the Selection Trust in association with the American Metal Company and the American Potash and Chemical Corporation), and by an independent producer in the same area, G. H. Nolan. Underground mining and development replaced open pitting of the narrow but high grade lepidolite body at the Mauve mine, near Salisbury, of the Lepidolite Development Corporation.

A petalite-spodumene belt was discovered and in part prospected at Arcurus, near Salisbury. In many of these pegmatites the lithium minerals were found to be finely intergrown with quartz and feldspar which will necessitate concentration and milling.

Chrysotile asbestos maintained throughout the year its outstanding position in the country's over-all mineral production. The new giant mill of the Rhodesian Asbestos Ltd., operated by the Johns-Manville Corporation in conjunction with the Southern Minerals Ltd., the British Metals Corporation, and others, started operation at the end of the year. Ethel Asbestos Mines Ltd. completed development of the second level, 100 feet below the floor of the 1,200 foot long quarry, and started a deep diamond drilling program to ascertain details of asbestos mineralization in depth. The deepest hole is to be 1,800 feet long. Plans are being investigated to double the present production.

Falling world market demand and drastically reduced chrome ore prices had serious repercussions on Rhodesian chrome mining. A number of small producers, working either independently, or on a tribute basis were compelled to close down at the end of the year. Others, including larger companies, had to reduce overhead expenses and development of ore reserves in favor of stopping the available ore. But large groups, or medium mines with long term sales contracts continued production unaffected by adverse market conditions.

Regardless of the somewhat uncertain and depressing future of chrome mining, the German group, Otto Wolff of Cologne, acquired during the year large eluvial chrome claim holdings along the Great Dyke and carried out systematic sampling and investigation by close grid-drilling and pitting. Several million tons of chrome bearing soil have been proved, the grade varying from 7 to 14 percent  $Cr_2O_3$ . Concentrating tests are being carried out in Germany and also experiments with electrostatic separation. The Wolff group investigated a number of chrome mines during the year with the intention of obtaining a holding in Rhodesian chrome mining. They recently staked a considerable number of chrome claims on the Great Dyke.

Beryl continued to attract the small operators and more than 120 independent pegmatite occurrences were sporadically worked for beryl during the year. Beryl is recovered, as in other countries, by hand sorting from the usually weathered and kaolinized upper portion of the pegmatites. In average quarries mining losses of beryl are estimated at 60 percent of the extracted mineral.

The year under review saw many new developments relating to columbite-tantalite minerals. Sluicing of eluvial rubble started at the Benson pegmatite at Mtoko, where columbite-bearing soil and debris is scraped automatically into sluice boxes. A new concentrating mill was erected at Fort Victoria. At Bikita, Rhodesia's leading gold producer—The Lon-



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Mineral Exports from Sierra Leone for 1948, 1951, 1952, 1953, and 1954<sup>1</sup>

Commodity	1948	1951	1952	1953	1954
Chrome <sup>2</sup>	8,411	11,930	23,970	16,800	7,810
Diamonds <sup>4</sup>	461,685	477,130	423,327	366,738	337,320
Gold <sup>3</sup>	1,994	2,207	2,321	3,271	2,509
Iron ore <sup>5</sup>	926,370	1,184,735	1,378,959	827,000	568,476

1. First eight months. 2. Metric tons. 3. Ores and concentrates. 4. Metric carats. 5. Troy ounces.

don & Rhodesian Mining & Land Co., Ltd is investigating and developing the Bohera pegmatites under option. It is anticipated that 1955 will bring a considerable increase in production.

Rhodesian tin production is entering a new stage. The Kamativi Mines Ltd., under participation of the N. V. Billiton Maatschappij erected a 1000-ton per day concentrating mill and started production at the end of the year. The Kapata Mines Ltd. was investigated by the German Otto Wolff group.

Gold production continued to increase during the year regardless of the world-wide increase in the price of supplies. Excellent results were achieved with the new 3,000 ton plant at the Muriel mine, near Salisbury, with heads of about 1.0 fine ounce of gold per ton. Many improvements were made at the mill of the Olympus mine, Makaha, which has now become a steady producer. Large scale diamond drilling programs were carried out underground at the Cam and Motor, and Golden Valley mines at Gatooma.

Production of massive corundum continued well through the year. Several newly discovered deposits were investigated, but here again production appears to be limited by market demands.

Intensive developments of copper deposits were carried out during the year on the properties of the Rhodesian Copper Ventures Ltd., where several millions of tons of low grade copper ore have been developed or proved; The Sebungwe Mines and Exploration Company, which is connected with the Newmont Mining Corporation carried on considerable diamond drilling, geological mapping, and geophysical prospecting from boreholes and at surface at the Copper King and Copper Queen ore bodies. Newmont also investigated the scheelite deposits of the Alton Tungsten Mining Company near Mazoe, Salisbury District.

Several pollucite deposits were discovered during the year. Pollucite is a rare caesium mineral, and marketing possibilities are being investigated.

The Geological Survey of Southern Rhodesia was amalgamated with the Northern Rhodesian and Nyasaland Survey Departments. During the year it carried out investigations of several hundreds of mineral occurrences or mines, mapped geologically certain new areas and prepared detailed maps of more important mineralized zones.

## SIERRA LEONE

Area ..... 21,000 square miles

Capital ..... Free Town

Currency Unit . Sierra Leone Pound

Value ..... \$2.80

Chief Mineral Products—Diamonds, iron, chrome.

The actual total tonnage of chrome ore and concentrates produced during 1954 was 18,362, of which 15,000 were

shipped. These figures compare with a production of 24,750 tons in 1953 and shipments of 26,505 tons. The decrease in production during 1954 is attributed to the complete change over from open pit to underground mining. The new reduction and concentrating plant which came into full production in 1953 continues to give complete satisfaction. Prospecting work continued throughout the year on outlying properties with encouraging results.

Total tonnage of iron ore and concentrates produced during 1954 was 924,000 of which 665,000 tons were concentrates and 259,000 lump ore. The fall in production is due to the exhaustion of the Marampa lump ore reserves. However, extensive developments are taking place at the iron ore deposits around Tonkolili and the Sierra Leone Development Company has already commenced preliminary work on the sites for the new plant and installations. The Tonkolili deposits consist of lump ore and are situated some 80 miles from the Marampa mines.

Another serious decrease in diamond production is recorded. The position regarding illicit diamond mining has worsened during the year and it is feared in London that the caratage smuggled out of the Colony eventually finds its way behind the Iron Curtain, where the demand is insatiable. The ex-chief of M.I. 5 has been commissioned to investigate and advise, as the Sierra Leone Selection Trust (who own the sole concession rights for diamond mining throughout the Colony) fear that the position is beyond local control and that the unpoliced frontier with Liberia offers almost unrestricted freedom for the illicit traffic.

## SOUTH WEST AFRICA

Area ..... 322,393 square miles

Capital ..... Windhoek

Currency Unit ..... Pound S. A.

Value ..... \$2.80

Chief Mineral Products—Lead, copper, zinc, diamonds, manganese.

Tsumeb Corporation Limited reported greater metal production and tonnage of metal sales in 1954 than in any previous year. As the production table indicates, output of cadmium, copper, lead, and zinc showed substantial increases over 1953, and these gains were made at Tsumeb operations.

During the year, the firm started production at a small plant for the recovery of concentrate enriched in germanium. This concentrate is shipped to a custom smelter in Belgium for extraction of germanium and its ultimate sale. The current copper-lead concentrate production at Tsumeb has a recoverable germanium content in excess of present world consumption.

Bethlehem Steel Corporation reported the discovery of two major iron ore deposits with indicated reserves of 210,000,000 tons in the Kaokoveld area. Last year, output was expanded from the Sishen high-grade ore deposits in the Postmasburg area. The location of manganese and iron ore deposits at Handeklip Bay, Northwestern Cape, and of an iron ore deposit in the Van Rhynsdorp district, same region, was reported.

A new diamond-bearing terrace was discovered by Industrial Diamonds of South Africa (1945) Ltd. at Saddle Hill North, Luderitz district. Production was to start in the first quarter of 1955.

In the Luderitz district, Lorelei Copper Mines, Ltd. commissioned its 100-

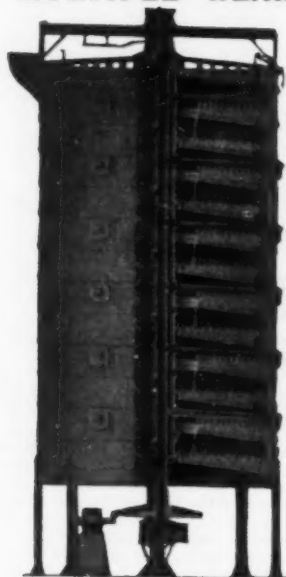
## Metal and Mineral Production and Value in Southern Rhodesia for 1953 and 1954

Commodity	Quantity	1953 £ Value	Quantity	1954 £ Value
Gold <sup>1</sup>	501,057	£6,219,374	535,852	£6,651,263
Gold premium <sup>1</sup>		220,862		35,743
Silver <sup>1</sup>	84,566	26,046	81,657	24,873
Diamonds <sup>2</sup>	5.50	50	2.00	30
Antimony ore <sup>3</sup>	53	1,509	117	4,295
Arsenic <sup>4</sup>	416	2,444	458	3,663
Asbestos <sup>5</sup>	87,739	6,542,731	79,961	5,922,724
Barite ore <sup>6</sup>	267	867		
Beryllium ore <sup>7</sup>	1,773	258,740	1,077	141,061
Chrome ore <sup>8</sup>	463,029	2,927,783	442,509	2,493,404
Columbite ore <sup>9</sup>	2.55	3,870	9.03	15,426
Copper <sup>10</sup>	210.8	28,202	297.8	38,388
Copper ore <sup>11</sup>	293	5,471	4.24	100
Copper conc. <sup>12</sup>			29	2,865
Corundum <sup>13</sup>	843	5,046	2,840	17,035
Fluorspar <sup>14</sup>	373	2,191	120	937
Iron ore <sup>15</sup>	69,478	13,384	70,885	13,291
Pyrite <sup>16</sup>	40,416	48,500	40,753	48,904
Lead conc. <sup>17</sup>	68.41	2,374	1.84	74
Lithium				
Amblygonite conc. <sup>18</sup>	336	6,428	434	14,008
Petalite ore <sup>19</sup>	11,579	41,098	26,707	131,796
Lepidolite ore <sup>20</sup>	7,682	31,557	26,909	136,216
Spodumene <sup>21</sup>	45	225		
Magnetite	10,824	32,478	77,915	38,879
Manganese ore <sup>22</sup>			18	9
Mica block <sup>23</sup>	147,068	47,073	184,897	53,776
Mica waste <sup>24</sup>	200,000	175		
Nickel ore <sup>25</sup>	63	307	62	921
Talc <sup>26</sup>	5.91	123	2.00	34
Tantalum conc. <sup>27</sup>	13.53	18,095	7.15	11,208
Tin conc. <sup>28</sup>	47.24	22,394	22.74	9,455
Scheelite conc. <sup>29</sup>	387	343,873	259	166,201

1. Fine ounces. 2. Metric carats. 3. Metric tons. 4. Pounds.



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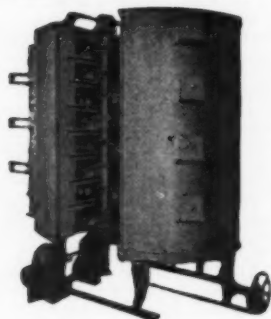
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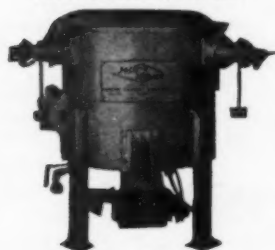
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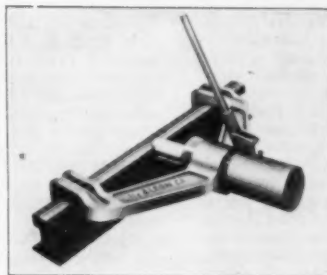
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[World Mining Section—101]

## Africa

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### TANGANYIKA

Area ..... 362,688 square miles

Capital ..... Dar-es-Salaam

Currency Unit ..... Pound

Value ..... \$2.80

Chief Mineral Products—Diamonds, gold, lead, mica.

Mining activity in Tanganyika is steadily increasing and there is every prospect of that increase being maintained, if not exceeded in the future.

The value of Tanganyika's mineral production during 1954 reached a new record of about £5,000,000, due largely to the increased output of diamonds.

Ten years ago Tanganyika was a prospector's country; now, individual prospecting is slowed because of the high cost, but company prospecting and company operation are on the increase.

Dr. Williamson, the owner of Williamson Diamonds Ltd's Mwadui mine, doubled his output of diamonds to (318,000 metric carats) during 1954 by working richer ground. This was done during the final stages of the construction of the new 7,000-ton-a-day treatment plant. After this plant starts, ground of much lower grade will be workable. The plant will commence production in the first half of 1955. The enlargement of this operation is costing £3,500,000, all of which is being obtained from revenue. The new dragline was erected.

During 1954 the Department of Geological Survey investigated its pyrochlore-bearing carbonatite discovery near Mbeya. Drilling and sampling indicated nearly 10,000,000 tons of ore averaging 0.3 percent  $\text{C}_2\text{O}_3$ , and then only a fraction of the deposit was sampled. In one hole drilled vertically, values were shown to persist to 800 feet depth, which was the limit of the hole. Tenders were asked by the Government to work this deposit and the announcement of the accepted tender is expected shortly. There is a coalfield near the property and hydroelectric possibilities within 50 miles.

Another deposit was being tested at

### Metal and Mineral Production, Sales and Sales Value for South West Africa in 1953, and 1954

Commodity	Production	1953 Sales	Sales Value	Production	1954 Sales	Sales Value
Beryl ore <sup>1</sup>	590	591	£100,375	563.9	448	£ 65,157
Bismuth ore <sup>1</sup>	112	426	140	2.5	—	—
Cadmium <sup>1</sup>	597	504	—	810	342	(5)
Copper <sup>2</sup>	13,493	13,758	—	15,684.06	13,777	(6)
Diamonds <sup>3</sup>	610,322	—	—	683,536	—	—
Fluorspar <sup>4</sup>	5,641	5,620	28,100	3,065	3,063	15,308
Graphite <sup>5</sup>	—	—	—	115	44	(731)
Lead <sup>6</sup>	65,287	65,133	6,667,432	77,147	68,386	6,741,682
Lithium ore <sup>1</sup>	10,379	11,989	86,221	7,386	5,534	58,418
Manganese ore <sup>1</sup>	40,655	40,654	463,292	27,447	30,971	282,460
Phosphate <sup>1</sup>	1,768	1,768	27,085	908	908	14,735
Sillimanite <sup>1</sup>	2,717	1,395	14,850	140	24	250
Tourmaline <sup>6</sup>	12,900	3,123	1,639	22,825	12,000	3,000
Amethyst quartz <sup>4</sup>	—	—	—	2,500	2,205	170
Tantalite-columbite <sup>4</sup>	17,634	14,266	16,833	26,558	35,953	24,573
Tin <sup>1</sup>	290	205	71,952	832.04	456.6	135,672
Scheelite conc. <sup>4</sup>	2,163	3,500	2,050	8,939	—	—
Wolfraimite conc. <sup>1</sup>	151	196	189,180	101	198	49,453
Vanadium <sup>1</sup>	1,064	1,166	1,130	1,130	99	(6)
Zinc <sup>1</sup>	17,385	14,861	560,468	22,032	22,123	348,503

\* Records of the Government Mining Engineer. 1. Short tons. 2. Metric Carats. 3. Grams. 4. Pounds. 5. Value contained in zinc. 6. Value contained in lead.

Kiabakari by the Tangold Mining Company Limited, a subsidiary of New Consolidated Gold Fields Limited and the Colonial Development Corporation. A large tonnage of low-grade gold ore was indicated by drilling and this is now being proven by underground development. Power supply will be difficult. There is little local timber, and oil transport costs are high.

At the Mpanda mine of Uruwira Minerals Ltd., lead concentrate production fell while the new 1,300 ton per day mill was being built.

### TUNISIA

Area ..... 43,313 square miles

Capital ..... Tunis

Currency Unit ..... Franc

Value ..... \$0.0029

Chief Mineral Products—Iron, phosphate, lead, zinc.

The favorable iron ore market in 1953 which made it possible to raise exports to 1,037,500 tons was not maintained during 1954. Exports dropped to 897,100 tons, showing a regression of 13.53 percent. Extraction fell from the 1953 figure of 1,057,050 tons to 949,000 tons, a drop of 10.17 percent. Almost all the exports (71.77%) were sent to Great Britain (643,-

870 tons). Germany took 89,100 tons, and Holland 86,110.

Tunisia exported 1,917,600 tons of phosphate during 1954, as against 1,513,300 tons in 1953. This increase in sales produced an acceleration in the rate of mining which rose from 1,718,530 tons in 1953 to 1,823,360 tons in 1954. The expansion was due, in great part, to efforts to improve the yield of the ores. The main countries to which the 1954 phosphates were exported were France, 588,000 tons, and Italy, 451,580 tons. Greece, Holland and Spain, each imported 125,000 tons.

Domestic use increased to 187,000 tons, divided among three plants; 68,970 tons to the Hyperphosphate Reno de Sfax, which produces a very finely milled phosphate, directly usable for agricultural purposes; 87,125 tons to the S.I.A.P.E.

A constant improvement in the mining of lead ore has been evident in Tunisia: 41,560 tons in 1954, as against 37,940 tons in 1953, and 36,530 tons in 1952. All ore is treated *in situ* in the three foundries of Megrine, Djebel Hallouf and Bizerte, which produced 27,190 tons of refined lead in 1954. Almost all this lead is exported. The 1954 figures were 26,695 tons, of which 25,495 went to France.

In 1954 the production figure for lead ore of the Cie Royale Asturienne des Mines was 13,340 tons, as compared with 13,210 tons in 1953. The 1954 figures for the Société Minière et Metallurgique de Penarroya were: lead ore, 10,600 tons; zinc ore, 3,440 tons. The Société Minière du Djebel Felten mined 1,040 tons of lead ore and 6,050 tons of zinc ore in 1954. The other principal producers of lead ore were: Bou Aouane, 5,740 tons; Djebel Hallouf, 4,140 tons; les Mines Réunies, 2,680 tons; Garm Alfaya, 1,360 tons.

### UGANDA

Area ..... 93,981 square miles

Capital ..... Entebbe

Currency Unit ..... Pound

Value ..... \$2.80

Chief Mineral Products—Tin, tungsten, columbite, gold.

Mineral production in Uganda during 1954 showed little variation. Wolfraimite

### Tanganyika Production and Exports of Minerals and Their Value in 1953 and 1954

Commodity	Quantity 1952	Value	Quantity 1953	Value	Quantity 1954	Value
Diamonds <sup>2</sup>	331,344	£4,046,191	170,509	£1,765,518	329,947	£3,128,765
Gold (refined) <sup>2,7</sup>	130,851*	861,257	69,886	903,993	72,212	901,227
Graphite <sup>8</sup>	—	—	19	475	—	—
Gypsum <sup>8</sup>	495	1,239	1,713	4,922	4,732	10,339
Kaolin <sup>8</sup>	126	1,370	1,147	12,170	260	2,483
Kyanite <sup>8</sup>	—	—	20	520	—	—
Lead concentrates <sup>4</sup>	4,837	399,829	6,174	484,265	4,604	359,427
Lime <sup>8</sup>	170	840	629	2,608	5,946	20,938
Magnesite <sup>8</sup>	—	—	57	685	78	937
Mica: sheet <sup>8</sup>	107	142,674	78	106,312	78	74,503
Mica: ground <sup>8</sup>	14	254	—	—	—	—
Mica: waste <sup>8</sup>	1	19	51	261	28	523
Salt <sup>8</sup>	4,483	42,273	5,629	55,378	21,611	178,560
Silver (refined) <sup>2,8</sup>	—	—	41,580	12,803	42,672	13,070
Tin concentrates <sup>8</sup>	63	44,571	62	34,994	54	27,322
Tungsten concentrates <sup>8</sup>	36	45,371	31	25,767	12	7,751
Other minerals	—	—	—	—	—	340,241
Totals	—	£5,585,888	—	£3,410,471	—	£5,075,180

1. Estimated. 2. Metric carats. 3. Fine ounces. 4. Metric tons. 5. Long tons. 6. Unrefined bullion. 7. Excludes gold contained in lead concentrates. 8. Excludes silver contained in lead concentrates.



## Africa

miners continued to sell their concentrates to the United Kingdom government under the five-year contract with a guaranteed minimum price. Wolframite export showed a small increase.

There was some interest shown in Kigezi district minerals by some of the larger mining houses. Prospecting by Union Corporation Ltd. in Ankole, and Electrorail, in Kigezi, continued. No deposits of any magnitude were found but considerable interest has been shown in the pegmatite veins in Kigezi which appear to be numerous.

The main wolframite producers continued with the installation of milling and concentration machinery. Towards the end of the year one of the main producers was about ready to commence milling on a large scale.

Kagera Mines Limited continued to prospect for ores of tantalum and columbium within the area of its special exclusive prospecting licenses. The price of these minerals, which remained steady for the first three-quarters and showed an increase in price in the fourth quarter, should stimulate interest. The pegmatites with which this ore is associated have also yielded quantities of beryl.

At the Kilembe copper-cobalt deposit at Toro, Kilembe Mines vigorously followed a program of housing construction, preparation of a site for the concentrator, and installation of the hydro-electric power plant on the Mobuku River. Both the Uganda Development Corporation and the Colonial Development Corpora-

tion now have a financial interest in this venture. It is expected that production could start in about one to two years time. Output will be 740 tons of blister copper, and 96 tons of cobalt precipitate per month.

The Tororo Exploration Company which consists of Monsanto Chemicals Ltd, Frobisher Ltd., and the Uganda Development Corporation Ltd, is examining the economics of a treatment plant to produce apatite concentrate for the manufacture of chemicals, fertilizers, and pyrochlore (columbium) concentrates. A small experimental concentrator has been installed at the property. Adequate electric power from Jinja has been provided by the construction of a transmission line.

creasing the treatment capacity to 50,000 tons a month.

Shaft-sinking, preliminary to opening up the deeper levels, proceeded at Venterspost Gold Mining Co. Ltd. and Libanon Gold Mining Co. Ltd.; the former mine initiated development to explore the Venterspost Contact Reef in the adjoining, northern property of Middelvel Estate and Gold Mining Co. Ltd. West Driefontein Gold Mining Co. Ltd. started sinking its No. 5 shaft which will be equipped with Koepe-type hoists installed at the top of a reinforced concrete headframe; achieved a faster sinking rate in No. 3 Shaft; prepared to resume sinking the No. 4 Shaft; commissioned the third milling unit and started installation of the fourth, the unit capacity being 22,000 tons a month.

With the initial payable zone defined in the Kinross-Trichardt section of the Bethal area, mineral rights were reported purchased by a company in the Union Corporation group; an early start of development operations is indicated. On balance, further options were required northwards, northeastwards, and eastwards from Bethal. Options were also reported acquired to the south of Benoni, and in the Venterskroon area.

Four of the developing gold mines in the Orange Free State field officially entered the producing stage in 1954; namely, President Steyn Gold Mining Co. Ltd., President Brand Gold Mining Co. Ltd., Harmony Gold Mining Co. Ltd., and Virginia O.F.S. Gold Mining Co. Ltd. These additions raised the number of producers to eight, after allowing for the merging of Freddie's North and Freddie's South into Freddie's Consolidated Mines Ltd. There remain only Loraine Gold Mines Ltd., Free State Geduld Mines Ltd., Merriespruit O.F.S. Gold Mining Co. Ltd., and Jeannette Gold Mines Ltd. to be brought to the producing stage, probably in the order mentioned.

In 1954, milling increased to 4,811,800 tons with a recovery of 1,122,605 fine ounces compared with 2,124,000 tons, 431,261 fine ounces in 1953.

Notwithstanding the persistence of such retarding factors as water-bearing fissures and relatively extensive local faulting throughout the field, and the khaki shale in the Odendaalsrus sector, reef development in 1954 was advanced at a satisfactory rate. Reef values continued to be satisfactorily high, with those in the President Brand mine outstandingly so. From the start to 31st December 1954, 385,750 feet on the

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Uganda Mineral Exports and Value for 1952, 1953, and 1954

Commodity	Quantity	1952 £Value	Quantity	1953 £Value	Quantity	1954 £Value
Gold <sup>1</sup>	181.2	£ 2,374	511	£ 5,529	568	£ 5,700
Tin <sup>2</sup>	154.37	107,188	128	65,035	119	57,775
Bismuth <sup>3</sup>	3.58	3,178	3	1,858	2.03	1,300
Beryl <sup>1</sup>	—	—	32.5	6,510	29	4,200
Amblygonite <sup>2</sup>	—	—	16.3	663	7.24	257
Columbite <sup>2</sup>	4.06	4,788	10.5	15,506	13.5	24,300
Wolframite <sup>2</sup>	131.81	220,399	157	164,950	168	147,000
Lead <sup>1</sup>	2.00	225	—	—	67.6 <sup>3</sup>	5,790
Mica <sup>3</sup>	—	—	—	—	1,500	—

1 Metric tons. 2. Fine ounces. 3. Galena.

## UNION OF SOUTH AFRICA

Area . . . . . 472,550 square miles

Capital . . . . . Pretoria-Cape Town

Currency Unit . . . . . Southern

Rhodesian Pound

Value . . . . . \$2.83

Chief Mineral Products—Diamonds, gold, manganese, platinum, chrome, copper, uranium.

The main factors in the substantial increase in gold output to 13,237,119 fine ounces in the Union of South Africa in 1954 were the increased European and Native labor complements, their greater productive efficiency, slightly better electric power supplies, and the availability of a wider range of stores and general supplies locally produced and imported. All these availabilities, how-

ever, remained below the levels necessary for capacity operations.

The gold producers of the Transvaal continue to be the main source of gold in the Union. Output in 1954 reflected a marked increase over that in 1953, the respective figures being 12,114,505 fine ounces and 11,509,353 in 1953.

Some deep-level mines on the Central Rand switched from hanging-wall resuing to underhand longwall stoping methods with many benefits, including a reduction of pressure bursts. Many of the older mines of the Central and West Rand have secured additional lease claims adjoining the southern deeper sections. The sinking of deep level shafts was continued by some of these producers: namely, East Rand Proprietary Mines Ltd., City Deep Ltd., Robinson Deep Ltd., Rand Leases (Vogelstruisfontein) Gold Mining Co. Ltd., and Durban Roodepoort Deep Ltd.

The No. 2 Shaft of Vlakfontein Gold Mining Areas Ltd. (in which the previous world record sinking rate for all types of shafts of 585 feet in one month was achieved in 1953) was completed to its final depth and facilitates opening up the western section; a start was made to in-

## Africa

Metal and Mineral Production for the Union of South Africa in 1951, 1952, 1953\*, and Production, Sales, and Sales Value in 1954\*

Commodity	1951 Production	1952 Production	1953 Production	1954 Production	1954 Sales	1954 Sales Value
Gold <sup>2</sup>	11,516,450	11,818,681	11,940,616	13,237,119	13,237,119	£164,675,341
Diamonds <sup>2</sup>	2,163,170	2,383,211	2,717,620	2,858,688	2,891,264	13,233,501
Silver <sup>2</sup>	1,162,588	1,176,433	1,193,152	1,320,060	1,320,060	404,179
Osmiridium <sup>2</sup>	6,883	6,141	6,966	6,482	6,482	190,048
Copper <sup>1</sup>	38,533	38,705	39,844	46,632	49,134	9,971,170
Tin <sup>1</sup>	808	1,591	2,400	2,552	2,827	908,218
Antimony conc. <sup>1</sup>	24,176	12,958	4,773	15,150	16,277	1,020,017
Beryl ore <sup>1</sup>	897	413	531	203	192	28,874
Bismuth ore <sup>1</sup>	6	3	1	1	1	420
Chromite ore <sup>1</sup>	564,017	639,370	708,567	706,939	503,955	1,983,814
Iron ore <sup>1</sup>	1,560,277	1,938,857	2,112,346	2,086,773	2,060,501	1,175,695
Lead ore <sup>1</sup>	919	866	706	239	230	10,126
Manganese ore <sup>1</sup>	704,133	964,127	912,339	772,866	594,517	3,095,418
Tungsten conc. <sup>1</sup>	203	271	421	607	573	654,333
Andalusite <sup>1</sup>	12,530	21,477	11,772	18,174	14,152	119,230
Asbestos <sup>1</sup>	101,279	133,839	94,817	109,151	102,455	5,726,902
Barite <sup>1</sup>	2,157	1,894	2,092	2,342	2,058	8,187
Corundum <sup>1</sup>	5,030	4,179	1,865	1,443	1,443	37,081
Fluorspar <sup>1</sup>	12,056	11,343	16,029	21,996	14,262	83,337
Graphite <sup>1</sup>	252	389	413	1,396	1,164	6,600
Kaolin <sup>1</sup>	10,140	8,244	8,719	14,437	13,474	32,428
Magnetite <sup>1</sup>	17,846	26,906	25,229	26,874	22,479	49,884
Nical <sup>1</sup>	1,208	2,941	2,147	2,056	4,556	39,774
Talc <sup>1</sup>	4,752	5,567	7,974	7,974	7,413	19,149
Vermiculite <sup>1</sup>	24,324	39,918	33,844	45,633	44,006	270,476
Platinum group metals <sup>2</sup>	—	—	299,117	338,162	270,885	6,701,144
Lithium ore <sup>1</sup>	—	—	60	57	57	1,568
Pyrite <sup>1</sup>	—	—	103,446	252,598	236,513	657,945

\* Records of the Government Mining Engineer. 1. Short tons. 2. Fine ounces. 3. Metric carats.  
4. Metal and concentrate.

Basal Reef horizon had been sampled and 67.3 percent proved payable averaging 510 inch-dwts. The total footage developed to the same date amounted to 1,563,438 feet.

The occurrence of the khaki shale in the hanging-wall has proved a serious impediment, especially it would seem in the Freddie's Consolidated Mines; perhaps to a less extent in the Free State Geduld, Western Holdings, and Welkom mines; and seemingly less still in the Presidents Brand and Steyn mines. Mining methods have been adapted to conditions. Stopeface mechanical scraping has been applied wherever possible, with St. Helena Gold Mines Ltd. however favoring manual stope-cleaning. Rescue stopping methods have been adopted where the khaki shale renders the hanging wall particularly unstable. In the Freddie's Consolidated property, the supplementary measure of selective mining is being relatively extensively applied.

Production of uranium oxide by the designated gold producers of the Transvaal and of thorium concentrates from the monazite deposits of Van Rhynsdorp in the northwestern Cape Province advanced very considerably in 1954. This was reflected in the increased exports of prescribed (radioactive) material to £14,835,344 from the 1953 figure of £3,873,029. In both cases uranium oxide accounted for very much the greater proportion of the exports. The value of gold and uranium production during 1955 is expected to be raised by about £30,000,000 from the 1954 levels—that is, to a roughly estimated overall total of about £210,000,000. Declared uranium profits in 1954 advanced to £8,105,744 from the 1953 figure of £1,828,067, the aggregate tonnages milled by the uranium-producing mines being respectively 12,936,000 and 8,535,000.

During 1954 no uranium production was effected by the designated Free State mines. Freddie's Consolidated Mines Ltd. was accepted as a uranium producer with arrangements made to treat the residues in the Welkom uranium plant from the

first 1955 quarter. This plant was completed and will also probably treat in due course residues from Welkom Gold Mining Co. Ltd., Free State Geduld Mines Ltd., and Western Holdings Ltd. The uranium plant at President Steyn Gold Mining Co. Ltd. was completed and treatment of that mine's and President Brand Gold Mining Co. Ltd.'s residues commenced in the first 1955 quarter. The acid plant—one of the world's largest—of the Virginia O.F.S. Gold Mining Co. Ltd. was commissioned early in 1955 and uranium production is scheduled to start; the uranium plant is being and the acid plant may be extended. These plants will also treat uranium and pyrite concentrates from Merriespruit O.F.S. Gold Mining Co. Ltd. The uranium plant of Harmony Gold Mining Co. Ltd. will start uranium production early in 1955.

There were no outstanding developments in the diamond producing fields of South Africa during 1954. Diamond sales, especially in respect of gem varieties, were dependent entirely on current output; gem stocks were at an irreducible minimum. Reduced purchases of industrial diamonds for the United States stockpiles were reported.

Rustenburg Platinum Mines Ltd. in the Transvaal in 1954 completed and commissioned the Central Deep Shaft and the joint matte treatment plant. Production throughout the year proceeded at the capacity rates at both the Rustenburg and Union Sections. Platinum Prospecting Association No. 3 conducted prospecting operations in the platinum-bearing deposits in the Boschoppie and Brakspuit properties in the Rustenburg area, Western Transvaal.

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2. Billings Region ..... J. R. Lerwill, Billings, Mont.
3. Carlsbad Region R. H. Allport, Carlsbad, New Mexico
4. Salt Lake City Region  
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5. Mid-Continent Region .. Ernest Blessing, Miami, Okla.
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Department of the Interior, Washington 25, D.C.

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CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

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Lands and Minerals Officer, Rowland E. Tragitt, Tel. Alpine 2-0409

**IDAHO STATE OFFICE, Boise, Idaho**  
Lands and Minerals Officer, Nolan F. Keil, Tel. 3-4603

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Lands and Minerals Officer, A. L. Simpson, Tel. 3-8651

**UTAH STATE OFFICE, Salt Lake City, Utah**  
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**AREA III, Denver, Colorado**  
Area Administrator, Westal B. Wallace, Tel. Belmont 3-3611

Lands and Minerals Staff Officer, Harold T. Tysk, Tel. Belmont 3-3611

**COLORADO STATE OFFICE, Denver, Colorado**  
Lands and Minerals Officer, Elliott J. Hall, Tel. KE 4-4151

**MONTANA STATE OFFICE, Billings, Montana**  
Lands and Minerals Officer, Theo. E. Anhder, Tel. 4-4175

**NEW MEXICO STATE OFFICE, Santa Fe, New Mexico**  
Lands and Minerals Officer, Adlai S. Baker, Tel. 3-6335

**WYOMING STATE OFFICE, Cheyenne, Wyoming**  
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This area also includes the states of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma, and Texas.

**AREA IV, Anchorage, Alaska**  
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**EASTERN STATES OFFICE, Washington 25, D.C.**  
Eastern States Supervisor, Charles R. Drexilius, Tel. 3803  
Chief, Land Classification and Forestry Section, Charles P. Mead, Tel. 3607  
Includes all states not previously listed.

## Defense Minerals Exploration Administration

Department of the Interior, Washington 25, D.C.

REpublic 7-1820

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DIRECTOR, NON-METALLIC MINERALS DIVISION  
Lawrence G. Houk  
DIRECTOR, CONTRACT ADMINISTRATION AND AUDIT DIVISION ..... Jay L. Chambers

### FIELD TEAMS

Contacts for Field Investigations

#### REGION I

Alaska District, Alaska

Executive Officer: S. H. Lorain—Telephone: Douglas-2170, Bureau of Mines, P. O. Box 560, Juneau, Alaska.

Northwest District, Idaho, Montana, Oregon, & Washington

Executive Officer: A. E. Weissenborn—Telephone: Temple-1434, South 157 Howard Street, Spokane 8, Washington.

#### REGION II

California & Nevada

Executive Officer: Spangler Ricker—Telephone: Reno 3-1071, 1605 Evans Avenue, Reno, Nevada.

#### REGION III

Arizona, Colorado, Nebraska, New Mexico, North Dakota, South Dakota, Utah, & Wyoming

Executive Officer: W. M. Traver—Telephone: Keystone-

4151, Bureau of Mines, 224 New Customhouse Building, Denver 2, Colorado.

#### REGION IV

Arkansas, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, & Texas

Executive Officer: Clinton C. Knox—Telephone: 5344, Box 431, Post Office Building, Joplin 8, Missouri.

#### REGION V

Alabama, Connecticut, Delaware, Florida, Georgia, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia, & Wisconsin

Executive Officer: Robert A. Laurence—Telephone: 5-5376, Room 13, Post Office Building, Knoxville 2, Tennessee.

# **DIRECTORY SECTION**

## **Section I**

### **DIRECTORY OF U. S. MINING OPERATIONS**

*The mining industry's guide to  
current information on active  
operations in the U.S. and Alaska.*

*Page 184*

## **Section II**

### **ORE BUYER'S GUIDE**

*A Directory of possible buyers  
of ore metals and non-metallics.*

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# DIRECTORY

## United States Mining Operations

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A CAREFUL SURVEY OF SOME 4,850 MINING and allied processing operations, both active and dormant, was the basis of this list of United States and Alaska mining operations. While MINING WORLD cannot guarantee 100 percent accuracy for this directory, it believes that the list is the best such reference available to the mining industry from any source.

FOR THE GREATEST POSSIBLE UTILITY operations are listed alphabetically by state. Listings are carried under the name of the operating company, owner, mine, or individual operator, according to the wishes of the parties concerned. In cases where properties are commonly known by more than one name, cross references were used.

QUESTIONNAIRE FORMS covering major operating details and personnel were mailed over a period of six months. Where information supplied by the operator or owner was not complete, supplementary data was obtained from field reports compiled by staff members, records furnished by the MINING WORLD news bureau, and information from federal and state mining agencies and regional mining associations.

THE PROPERTIES WERE ALL ACTIVE and producing when surveyed, except where "under development" and "idle" have been added. Totally inactive properties with no indication

of future resumption of operations were deleted. Tonnages listed are for daily production, unless otherwise noted. Minerals and metals are listed in order of importance. Key personnel are listed under the address where they may be reached, and unless otherwise specified mill and smelter addresses are the same as those given for the mines.

A SPECIAL NOTE ABOUT URANIUM COMPANIES. Only those uranium companies that are actually operating are included in this directory. Although MINING WORLD contacted several hundred more uranium companies and hope-to-be uranium companies than are listed on the following pages, only those which gave proof of actually being in the process of production, development, or exploration work were included. In compliance with security precautions no uranium tonnages have been listed; however, mines have been designated as "producing," "under development," or "exploring."

IF YOUR MINE WAS NOT LISTED in this year's directory, notify the Directory Department, MINING WORLD, 121 Second Street, San Francisco 5, California, and your name will be added to the list receiving questionnaires for next year's directory section.

### ALASKA

#### A & S MNG CO

Wiedeman  
PLACER Mascot Cr, Koyukuk dist,  
Nunavut

#### ACE MNG CO

Box 137, Nome  
Pres. Albert Erbele  
Vice-Pres. Clyde Kammerer  
Gen Mgr. E C Strub  
ACE MINE 22 mi NW of Nome,  
surface, Au

#### ADMIRALTY - ALASKA GOLD MNG CO

Box 529, Juneau  
Pres. Henry Raden  
Gen Mgr. W S Rebeck  
LODE MINE, Puster Bay,  
Admiralty dist

#### AGOFF, HARRY

c/o Prince Cr Mng Co, Flat  
PLACER Prince Cr, Mineral dist,  
Nunavut

#### ALASKA COPPER MINES INC

Box 1368, Seattle 14, Wash  
PLACER MacIaren R, Valdez Cr  
dist, Cu  
Under devel

ALASKA EXPLOR & MNG CO  
c/o Mike Trepte, Talkeetna  
PLACER on Bird Cr or Talkeetna,  
Yentna dist, hydraulic, Au

#### ALASKA JUNEAU GOLD MNG CO

1022 Crocker Bldg, San Francisco,  
California  
Pres. C A Norris  
VPS. Northern Bradley  
P R Bradley, Jr.  
Sec-Treas. J Kistam  
MINE at Juneau, undergr. Au.  
Ag. Pb, idle  
14,000 - TON GRAY FLOT MILL  
Gen Mgr. J A Williams  
Asst Gen Mgr. E G Nelson  
Purch Agt. Northwest Lead Co

#### ALASKA METALS MNG CO

Box 945, Fairbanks  
STEFOVICH & GOLBERT  
PROPERTIES  
LODE MINES, Gilmore Dome,  
Fairbanks dist, W Explor

#### ALASKA PACIFIC CONS MNG CO

609 Colman Bldg, Seattle 4, Wash  
Pres. V A Montgomery  
VP & Gen Mgr. Wm M Stoll  
Sec. Carl V Eismann  
INDEPENDENCE MINE, 25 mi N of  
Wasilla, undergr. idle  
100 - TON FLOT - AMAL MILL

#### ALASKA PLACER CO

380 Colman Bldg, Seattle, Wash  
Pres. & Gen Mgr. Ralph Lomon  
VP: C J Lomon

Sec-Treas. Robert Groninger  
PLACER on Nukluk R, Council dist  
Seward Penin reg. 2 1/2-ft  
dredge, Au

#### ALASKA TIN CORP

None  
LODE & PLACER, Est Mt. Port  
Clarence dist, Sn  
Prospect

#### ALASKA URANIUM EXPLOR CO

Fairbanks  
Prospect, interior reg

#### ALASKAN ASSOCIATES, LTD

1117 Equitable Bldg, Portland Ore  
(See Big Horrah Mine, Inc)

#### ALBERTSON, E O & PETTYJOHN, FRED

Big Delta  
PROSPECT, MacIaren R, Valdez Cr  
dist, Cu

#### ALDER CREEK MNG CO

Box 1998, Fairbanks  
Mgr. Martin Sather  
PLACER 34 mi N of Fairbanks, Au

#### ALLUVIAL GOLDS, INC

Coal Cr  
Pres. & Gen Mgr. Ernest N Petty  
Diro. Walter Seligman, E D Bull  
Mrs A D McRae  
MINE on Woodchopper Cr, Circle  
dist, Yukon R Region, 4 ft dredge Au

#### AMERO, A W

Chandler  
NO 2 above Upper Discovery on Big  
Cr, Yukon R region, Placer, Au

#### ATLAS MINES

Box 105, Nome  
Gen Mgr. Geo Waltheim  
PLACER MINE, 100 mi N of Nome,  
Kougarok dist, Seward Penin reg  
dragline-dredge-hydraulic, Au  
Prod. 300 yds daily  
MILL, Kougarok

#### ATTWOOD, MERTON J

Metalline Falls, Wash  
PLACER MINE, Chicken, dragline  
doser, Au

#### B C MICA, LTD

Vancouver, B C  
LODE Siskiaton Island, Ketchikan  
dist, mica Explor

#### BABEL, MC CANAN & THORGAARD

Fairbanks  
LODE Valdez Cr  
Prospect

#### BACKSTROM, GUST

Flint  
IDAO PLACER MINE, Idaho Cr,  
Mitarod dist, Yukon R, Hydraulic,  
Au

#### BALDWIN, JAMES E & CHARLEY MOON

Box 371, Nome  
PLACER on Sweepstake Cr,



Koyuk dist, Seward Peninsula reg,  
dragline-doser-hydraulic, Au

#### BARGE, EDDIE J

Talkeetna  
PLACER, Dutch Cr, Yentna dist,  
hydraulic, Au

#### BARRETT, FRANK

Chickena  
PROSPECT MOSQUITO FORK, 40 mi  
dist, Au

#### BARTHOLOMAE CORP

1033 Brae Rd, Fullerton, Calif  
Pres & Gen Mgr: W A Bartholomae Jr  
GOLD PLACER MINE, Gold Run Cr  
Port Clarence  
GOLD MINE, Ester Dome, via  
Fairbanks, idle  
Engr: B W Vallat

#### BASIN CR MNG CO

c/o Herbert Engstrom, Nome  
PROSPECT Basin Cr, Nome dist,  
nonfloat

#### BEATON, NEIL

PLACER MINE near Ophir dredge  
on upper Ganes Cr, Au  
(Leased from Innoko Dredging Co)

#### BEAVER, JAMES G & ENGLEHORN, FORREST

Talkeetna  
PLACER Cache Cr, Yentna dist,  
nonfloat

#### BEAVER, MARY & STEPHENS, V

Talkeetna

#### BELANGER, GEORGE & CAMERON, JACK

Box 1771, Palmer  
PLACER on Albert Cr, Nelchina dist,  
Copper R, reg, doser-hydraulic, Au

#### BELTZ, BERT & DOUGLASS, CHUB

Kotzebue  
PLACER, Bear Cr, Fairhaven,  
nonfloat

#### BIG HURRAH MINE, INC

1117 Equitable Bldg, Portland 4, Ore.  
Pres: Nils G Teren  
VP: Burton M Smith  
Sec: Wm B Murray  
BIG HURRAH QUARTZ MINE  
Box 85, Nome  
45 mi E of Nome, undergr, Au, W,  
Ag  
Mine Supt: George Hellerich  
Prod: 50 tons daily  
50 - TON-GRAV MILL

#### BITTNER, PAUL

Central  
PLACER Deadwood Cr, Circle dist,  
hydraulic, Au, Ag

#### BEDROCK MNG CO

Ophir  
Pres: Tom Woolard  
Sec: Ivor Carlson  
Asst Gen Mgr: Hjalmar Lindquist  
PLACER on Bedrock, 10 mi from  
Ophir, doser-dragline-hydraulic,  
Au, Wg

#### BLACK BUTTE MNG CO

Palmer  
FERN MINE, Willow Cr dist  
Cook Inlet-Sustina reg, Lode, Au  
(Leased from Fern Gold Mng Co)

#### BLAIR, ANDREW

Talkeetna  
PLACER Dutch Cr, Yentna  
dist, nonfloat, Au

#### BLASHER & KRISTOVICH

314 8th Ave S, Seattle 4, Wash.  
PROSPECT Naked Inlet,  
Ketchikan dist, mica

#### BLISS, PATRICK

Box 2223, Anchorage  
PLACER Sweepstakes Cr, Koyuk  
dist, nonfloat, Au

#### BLUNDELL, JOSEPH B

Big Lake  
PLACER on Waka Up Cr & Jim Poo  
Koyuk dist, Au

#### BODIS, GEORGE

Box 44, Nome  
PLACER on Dick Cr, Seward Peninsula  
dist, Seward Peninsula reg, hydraulic-  
doser, Au  
(See Dick Creek Placers)

#### BRADLEY, C W & LYONS, L N

Talkeetna  
GOLD PLACER on Cache Cr

#### BRINER, HENRY

Nome  
PLACER Penny Cr, Nome dist, Au

#### BRINKER - JOHNSON CO

351 California St.,  
San Francisco, Calif  
Pres: W W Johnson  
VP: T Keith Johnson  
PLACER on Caribou Cr, via  
Fairbanks 4 1/2-ft dredge, Au  
Ag, idle  
(Owned by Walter W Johnson Co  
Balfour Bldg, San Francisco,  
Calif.)

#### BRONNICH, FRED

Sitka, via Gulikana  
PLACER on Slope Cr, Au

#### BURNETTE, DEWEY & HUNTER, M

Box 1595, Fairbanks  
PLACER Crooked cr, Kantishna  
dist, nonfloat, Au

#### CANYON CR MNG CO

Aniak  
Gen Mgr: Jens A Kvamme  
PLACER on Canyon Cr, Aniak dist,  
Kuskokwim R reg, doser-sluice  
plate-hydraulic, Au

#### CARLSON, IVAN C

Ophir  
MINE Little Cr, Innoko dist, nonfloat

#### CARSTENS, H C

Central  
PLACER on Portage Cr,  
Circle dist, Yukon R reg, doser, Au

#### CASA DE PAGA GOLD CO

205 Marion Bldg, Seattle 4, Wash  
Pres: Robert Gillespie  
Sec-Treas: Robert L Stitt  
VP: Ken Fisher  
Dir: Robert Gillespie, Ken Fisher,  
D A Stewart, Robert L Stitt  
Gen Mgr: D A Stewart  
IMMACHUCK RIVER PLACER,  
c/o Weins Air Lines, Nome, 80 mi  
from Deering, Au  
Prod: 400,000 cu yds per yr

#### CHANDALAR MNG CO

613 3rd Ave., Anchorage  
Opr: Hugh Matheson, Jr  
PLACER Big Cr, Chandalar dist,  
nonfloat, Au

#### CHAPPEL, OLIVER L

Wickenburg  
PLACER on Thompson Pup, Koyukuk  
dist, Yukon R reg, hydraulic, Au

#### CHATHAM CR MNG CO

Box 64, Fairbanks  
PLACER on Chatham Cr, Fairbanks  
dist, Yukon R reg, dragline-doser, Au

#### CHENA MNG CO

PLACER Jackson Cr, Fairbanks  
dist, nonfloat, Au

#### CHICKEN HILL MINES, INC

Chickena  
Gen Mgr: George Turner  
PLACER 203 mi E of Fairbanks,  
hydraulic-doser, Au

#### CIRCLE DREDGING CO

Box 1404, Fairbanks  
PLACER Crooked Cr, Circle dist, Au

#### CLINE & CLINE PLACER

Cape Yakutat  
MINE, 140 mi SE of Cordova, Au, Ag  
under devel

#### COAST RANGE EXPLORATION

CO  
Box 1793, Anchorage  
LODE PROSPECTS  
(See Alaska)

#### COLLINSVILLE MINES,

A PARTNERSHIP  
1507 H St., Anchorage  
GOLD PLACER, 2,500-yd dragline

& nonfloat wash pl, 100 air mi NW  
of Anchorage  
Foreman: Carl Durand

#### COLORADO CREEK MNG CO

McGrath  
Partners: John E & Richard S  
Fullerton  
PLACER, 50 mi N of  
McGrath on Colorado Cr, Au, Ag  
Prod: 2,000 cu yds

#### COPPIN CONS ENTERPR

c/o Frank Coplin, Nome  
DREDGE, Mukluk R,  
Council dist, Au

#### CRANE, FRED & ASSOC

Kotzebue  
PROSPECTS NW & N Alaska

#### CUMMINS, LARRY

c/o B & K Trading Co,  
Talkeetna  
PLACER Thunder Cr, Yentna  
dist, Au

#### DAHL, ROBERT

Talkeetna  
22 BELOW on Nugget Cr, Yentna-  
Cache Cr dist, Au

#### DAWSON, PIEPER, ADAMS & ASSOC

Box 2384, Ketchikan  
LODE PROSPECT Leduc R,  
Ketchikan dist

#### DE COURCEY MT MNG CO,

INC  
Box 533, Anchorage  
Pres: Ed Dodd  
VP: John McCormack  
Sec: Ray Wolfe  
Eng in Charge: Paul M Sorensen  
RED DEVIL MINE, 7 mi S of  
Sleetmats, Hg  
DE COURCEY MINE, 10 mi N of  
Crooked Creek, Hg  
Under devel

#### DEGNAN, J A MNG CO

Ophir  
PLACER on Esperanto Cr, Innoko  
dist, dragline-doser, Au

#### DONLIN PLACERS

Crooked Creek  
Owner: Robert F Lyman  
PLACER in Snow Gulch 10 mi N of  
Crooked Cr, Aniak dist,  
Kuskokwim R reg, doser, Au

#### EDGEUMBE EXPLOR CO

Box 5 Hudson,  
Pasadena 5, Calif  
Pres: C T Morgan  
VP: C A Haley  
Treas-Gen Mgr: G H Morgan  
Sec: A Holden  
ECHO MINE, box 758, Sitka  
undergr, Au, Ag, idle  
ECHO GRAY MILL at Silver Bay

#### EDWARDS, HIRK

Solomon  
QUIGLEY'S HYDRAULIC MINE,  
Nome dist, Seward Peninsula reg  
PLACER on Solomon R, hydraulic,  
Au

#### ENSTROM & MCDUGALL

Hot Springs  
PLACER on American Cr, Hot  
Springs dist, hydraulic-doser, Au

#### ERICKSON, HALVER

Talkeetna  
PLACER Prospect, Yentna dist, Au

#### FERN GOLD MNG CO

502 Columbia Bldg  
Spokane, Wash  
Pres: J L Drume  
VP: Martin Woldson  
Sec: L R Gordon  
FERN MINE, Palmer undergr, Au  
87-TON AMAL FLOT MILL  
SMELTER, Tacoma, Wash

#### FRANKLIN MNG CO

Box 1381, Fairbanks  
Partners: Howard Bayless,  
Dick Roberts, Bob  
Roberts, & Ellis  
Roberts  
PLACERS at Franklin & Chicken,  
hydraulic, dragline, doser, Au  
(Leased from Fred Whitehead)

#### FRASCA & CO

Box 1182, Fairbanks  
PLACER on Eagle Cr, Circle

dist, hydraulic-doser  
(Leased from Berry Holding Co)

#### GILLETTE, B F

Box 283, Nome  
PLACER on Anvil Cr, Nome dist,  
shovel-in, Au

#### GILMER LODE MNG CO

Box 98, College  
SILVERMINE, undergr, Ag, Au, Cu  
Partners: T E Olson, Gilbert Monroe

#### GOLD PLACERS, INC

Coal Creek  
Pres & Gen Mgr: E N Patty  
VP: Walter Selgmon  
Dir: E B Bull & Mrs A D McRae  
DREDGE Circle dist, Au

#### GOLD STREAM MNG CO

Box 2116, Fairbanks  
Opr: D C Broad  
MINE Goldstream Cr, Fairbanks  
dist, nonfloat, Au

#### GOODNEWS BAY MNG CO, INC

422 White Bldg, Seattle, Wash  
Pres: A O Olson  
Sec: J W Weeks  
Treas: C J Johnston  
GOODNEWS BAY PLACER,  
Palmdam  
Gen Mgr: Edward Olson

#### GRANITE CREEK MNG CO

Ruby  
Pres: Wm Carlo  
VP: Wm Carlo Jr  
Sec: P Carlo  
PLACER on Ophir Cr, 50 mi S of  
Ruby, Ruby dist, Yukon reg,  
hydraulic-doser, Au, idle

#### HAGEN, OTTO AMUNC

Eagle  
MINE Fox Cr, Eagle dist,  
hydraulic, Au

#### HAMILTON, RAY & ASSOC

Millerhouse  
Gen Mgr: Ray Hamilton  
HYDRAULIC PLACER 9 mi S of  
Millerhouse, Au, idle

#### WARD, ERIC

Ophir  
BEAR CR PLACER, Folger, Au  
Mine Supt: Eric Ward

#### HASSEL MNG CO

Box 1071, Fairbanks  
PLACER MINE, Ready Bullion  
Cr, Fairbanks dist, Au

#### HAVENSTRIE OIL CO

MNG DIV  
Candle  
PLACER Candle Cr, Fairhaven  
dist, nonfloat, Au

#### HAYES, HOWARD

Box 1124, Douglas  
A J MINE TAILINGS, Juneau  
dist, nonfloat, Au

#### HEINER, LARRY

Box 102, Petersburg  
LODE PROSPECTS, Petersburg  
& Kupreanof dists, Au

#### HOLMES, WALTER

Maycreek via Cordova  
PLACER Dan Cr, Nivina dist,  
hydraulic, Au

#### HOPE MINE

c/o R V Watkins, Box 521,  
Fairbanks  
PLACER on Deep & Faith Cr,  
hydraulic-doser, Au

#### HUFFMAN, HALL MARCH

& NICKELSON  
Bernal  
PLACER PROSPECT Little Kasiguk  
Cr, Aniak dist, Au

#### HUNTER CR MNG CO

c/o Mele Jackovich,  
Rampart  
PLACER on Hunter Cr, Rampart  
dist, hydraulic-doser, Au

#### IDITAROD OPERATING CO

Box 907, Fairbanks  
Opr: Frank O Edgington  
PLACER on Golden Cr, 30 mi W of  
Tanana near Kallands Landing, Au

#### INLY, NICK & ASSOC

# DIRECTORY

## United States Mining Operations

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A CAREFUL SURVEY OF SOME 4,850 MINING and allied processing operations, both active and dormant, was the basis of this list of United States and Alaska mining operations. While MINING WORLD cannot guarantee 100 percent accuracy for this directory, it believes that the list is the best such reference available to the mining industry from any source.

FOR THE GREATEST POSSIBLE UTILITY operations are listed alphabetically by state. Listings are carried under the name of the operating company, owner, mine, or individual operator, according to the wishes of the parties concerned. In cases where properties are commonly known by more than one name, cross references were used.

QUESTIONNAIRE FORMS covering major operating details and personnel were mailed over a period of six months. Where information supplied by the operator or owner was not complete, supplementary data was obtained from field reports compiled by staff members, records furnished by the MINING WORLD news bureau, and information from federal and state mining agencies and regional mining associations.

THE PROPERTIES WERE ALL ACTIVE and producing when surveyed, except where "under development" and "idle" have been added. Totally inactive properties with no indication

of future resumption of operations were deleted. Tonnages listed are for daily production, unless otherwise noted. Minerals and metals are listed in order of importance. Key personnel are listed under the address where they may be reached, and unless otherwise specified mill and smelter addresses are the same as those given for the mines.

A SPECIAL NOTE ABOUT URANIUM COMPANIES. Only those uranium companies that are actually operating are included in this directory. Although MINING WORLD contacted several hundred more uranium companies and hope-to-be uranium companies than are listed on the following pages, only those which gave proof of actually being in the process of production, development, or exploration work were included. In compliance with security precautions no uranium tonnages have been listed; however, mines have been designated as "producing," "under development," or "exploring."

IF YOUR MINE WAS NOT LISTED in this year's directory, notify the Directory Department, MINING WORLD, 121 Second Street, San Francisco 5, California, and your name will be added to the list receiving questionnaires for next year's directory section.

### ALASKA

#### A & S MNG CO

Wickenburg  
PLACER Mascot Cr., Koyukuk dist.,  
humboldt

#### ACE MNG CO

Box 137, Nome  
Pres. Albert Erbe  
Vice-Pres. Clyde Kammerer  
Gen Mgr. E.C. Brubaker  
ACE MINE 23 mi NW of Nome,  
surface, Au

#### ADMIRALTY - ALASKA GOLD MNG CO

Box 523, Juneau  
Pres. Henry Raden  
Gen Mgr. W.S. Behovich  
LODE MINE, Foster Bay,  
Admiralty dist.

#### ACOFF, HARRY

c/o Prince Cr. Mng Co., Plai  
PLACER Prince Cr., Mounier dist.,  
humboldt

#### ALASKA COPPER MINES INC

Box 1365, Seattle 14, Wash  
PLACER MacLaren R., Valdez Cr.  
dist., Cu  
Valdez River

#### ALASKA EXPLOR & MNG CO

c/o Mike Trope, Talkeetna  
PLACER on Bird Cr. or Talkeetna,  
Yentna dist., hydraulic, Au

#### ALASKA JUNEAU GOLD MNG CO

1022 Crocker Bldg., San Francisco,  
California  
Pres. C.A. Morris  
VPS. W. Bradley  
PR Bradley, Jr.  
Sec-Treas. J. Nissim  
MINE at Juneau, undergr. Au,  
Ag, Pb, lile

#### 14,000 - TON GRAY FLOT MILL

Gen Mgr. J.A. Williams  
Asst Gen Mgr. E.G. Nelson  
Purch. Agt. Northwest Lead Co

#### ALASKA METALS MNG CO

Box 665, Fairbanks  
STEPHOVICH & GOLBERT  
PROPERTIES  
LODE MINES, Gilmore Dome,  
Fairbanks dist., W. Explor

#### ALASKA PACIFIC CONS MNG CO

609 Colman Bldg., Seattle 4, Wash  
Pres. V. & Montgomery  
VP & Gen Mgr. Wm M. Stoll  
Sec. Carl W. Steeman  
INDEPENDENCE MINE, 25 mi N of  
Wheatland, undergr. lile  
100 - TON FLOT - AMAL MILL

#### ALASKA PLACER CO

308 Colman Bldg., Seattle, Wash  
Pres. & Gen Mgr. Ralph Loomen  
VP: C. J. Loomen

#### Sec-Treas. Robert Groninger

PLACER on Nukluk R., Council dist.  
Seward Pass reg. 2 1/2-ft  
dredge, Au

#### ALASKA TIN CORP

Nome  
LODE & PLACER, Est. Mt. Port  
Clarence dist., Sn  
Prospect

#### ALASKA URANIUM EXPLOR CO

Fairbanks  
Prospect, interior reg

#### ALASKAN ASSOCIATES, LTD

1117 Equitable Bldg., Portland Ore  
(See Big Hurrah Mine, Inc)

#### ALBERTSON, E.O. & PETTYJOHN, FRED

Big Delta  
PROSPECT, MacLaren R., Valdez Cr.  
dist., Cu

#### ALDER CREEK MNG CO

Box 1388, Fairbanks  
Mgr. Martin Sather  
PLACER 14 mi N of Fairbanks, Au

#### ALLUVIAL GOLDS, INC

Coal Cr.  
Pres. & Gen Mgr. Ernest H. Petty  
Durs. Walter Seligman, E.D. Bull  
Mrs. A.D. McRae  
MINE on Woodchopper Cr., Circle  
dist., Yukon R. Region, 4 ft dredge Au

#### AMERO, A.W.

Chandler  
NO 2 above Upper Discovery on Big  
Cr., Yukon R. region, Placer, Au

#### ATLAS MINES

Box 195, Nome  
Gen Mgr. Geo. Waldheim  
PLACER MINE, 100 mi N of Nome,  
Kougarok dist., Seward Pass reg  
dragline-dredge-hydraulic, Au  
Prod. 300 yds daily  
MILL, Kougarok

#### ATTWOOD, MERTON J.

Metalline Falls, Wash  
PLACER MINE, Chicken, dragline  
dredge, Au

#### B.C. MICA, LTD

Vancouver, B.C.  
LODE Siltan Island, Ketchikan  
dist., mica Explor

#### BABEL, MC GAHAN & THORGAARD

Fairbanks  
LODE Valdez Cr.  
Prospect

#### BACKSTROM, GUST

Plai  
IDAO PLACER MINE, Idaho Cr.,  
Mounier dist., Yukon R., Hydraulic,  
Au

#### BALDWIN, JAMES E. & CHARLEY MOON

Box 371, Nome  
PLACER on Sweepstake Cr.,

Koyuk dist, Seward Peninsula reg,  
dragline-doser-hydraulic, Au

**BARGE, EDDIE J**

Talkeetna  
PLACER, Dutch Cr, Yentna dist,  
hydraulic, Au

**BARRETT, FRANK**

Chicken  
PROSPECT MOSQUITO FORK, 40 mi  
dist, Au

**BARTHOLOMAE CORP**

1033 Brac Rd, Fullerton, Calif.  
Pres & Gen Mgr: W A Bartholomae Jr  
GOLD PLACER MINE, Gold Run Cr  
Port Clarence  
GOLD MINE, Ester Dome, via  
Fairbanks, idle  
Engr: B W Vallat

**BASIN CR MNG CO**

c/o Herbert Engstrom, Nome  
PLACER Basin Cr, Nome Dist,  
nonfloat

**BEATON, NEIL**

PLACER MINE near Ophir dredge  
on upper Ganes Cr, Au  
(Leased from Innoko Dredging Co)

**BEAVER, JAMES G & ENGLEHORN, FORREST**

Talkeetna  
PLACER Cache Cr, Yentna dist,  
nonfloat

**BEAVER, MARY & STEPHENS, V**

Talkeetna

**BELANGER, GEORGE & CAMERON, JACK**

Box 1771, Palmer  
PLACER on Albert Cr, Nelchina dist  
Copper R, reg, doser-hydraulic, Au

**BELTZ, BERT & DOUGLASS, CHUB**

Kotzebue  
PLACER, Bear Cr, Fairhaven,  
nonfloat

**BIG HURRAH MINE, INC**

1117 Equitable Bldg, Portland 4, Ore.  
Pres: Nils G Teren  
VP: Burton M Smith  
Sec: Wm B Murray  
BIG HURRAH QUARTZ MINE  
Box 85, Nome  
46 mi E of Nome, undergr, Au, W,  
Ag  
Mine Supt: George Hellerich  
Prod: 50 tons daily  
50 - TON-GRAY MILL

**BITTNER, PAUL**

Central  
PLACER Deadwood Cr, Circle dist,  
hydraulic, Au, Ag

**BEDROCK MNG CO**

Ophir  
Pres: Tom Woolard  
Sec: Ivor Carlson  
Asst Gen Mgr: Hjalmar Lindquist  
PLACER on Bedrock, 10 mi from  
Ophir, doser-dragline-hydraulic,  
Au, W, Ag

**BLACK BUTTE MNG CO**

Palmer  
FERN MINE, Willow Cr dist  
Cook Inlet-Sustina reg, Lode, Au  
(Leased from Fern Gold Mng Co)

**BLAIR, ANDREW**

Talkeetna  
PLACER Dutch Cr, Yentna  
dist, nonfloat, Au

**BLASHER & KRISTOVICH**

214 8th Ave S, Seattle 4, Wash.  
PROSPECT Nasket Inlet,  
Ketchikan dist, miles

**BLISS, PATRICK**

Box 2225, Anchorage  
PLACER Sweepstakes Cr, Koyuk  
dist, nonfloat, Au

**BLUNDELL, JOSEPH B**

Big Lake  
PLACER on Wake Up Cr & Jim Pao  
Koyuk dist, Au

**BODIS, GEORGE**

Box 64, Nome  
PLACER on Dick Cr, Serpentine  
dist, Seward Peninsula reg, hydraulic-  
doser, Au  
(See Dick Creek Placers)

**BRADLEY, C W & LYONS, L M**

Talkeetna  
GOLD PLACER on Cache Cr

**BRINER, HENRY**

Homer  
PLACER Penny Cr, Nome dist, Au

**BRINKER - JOHNSON CO**

381 California St.,  
San Francisco, Calif  
Pres: W W Johnson  
VP: T Keith Johnson  
PLACER on Caribou Cr, via  
Fairbanks 4 1/2-ft dredge, Au  
Ag, idle  
(Owned by Walter W Johnson Co  
Balfour Bldg, San Francisco,  
Calif.)

**BRONNICH, FRED**

Slana, via Gulikana  
PLACER on Slope Cr, Au

**BURNETTE, DEWEY & HUNTER, M**

Box 1995, Fairbanks  
PLACER Crooked cr, Kantishna  
dist, nonfloat, Au

**CANYON CR MNG CO**

Akiak  
Gen Mgr: Jens A Kvamme  
PLACER on Canyon Cr, Akiak dist,  
Kuskokwim R reg, doser-sluice  
plate-hydraulic, Au

**CARLSON, IVAN C**

Ophir  
MINE Little Cr, Innoko dist, manfloat

**CARSTENS, H C**

Central  
PLACER on Portage Cr,  
Circle dist, Yukon R reg, doser, Au

**CASA DE PAGA GOLD CO**

309 Marion Bldg, Seattle 4, Wash  
Pres: Robert Gillespie  
Sec-Treas: Robert L Stitt  
VP: Ken Fisher  
Dire: Robert Gillespie, Ken Fisher,  
D A Stewart, Robert L Stitt  
Gen Mgr: D A Stewart  
IMMACULATE RIVER PLACER,  
c/o Weiss Air Lines, Nome, 60 mi  
from Deering, Au  
Prod: 400,000 cu yds per yr

**CHANDALAR MNG CO**

613 3rd Ave., Anchorage  
Opr: Hugh Matheson, Jr  
PLACER Big Cr, Chandalar dist,  
nonfloat, Au

**CHAPPEL, OLIVER L**

Wiseman  
PLACER on Thompson Pao, Koyuk  
dist, Yukon R reg, hydraulic, Au

**CHATHAM CR MNG CO**

Box 64, Fairbanks  
PLACER on Chatham Cr, Fairbanks  
dist, Yukon R reg, dragline-doser, Au

**CHENA MNG CO**

PLACER Jackson Cr, Fairbanks  
dist, nonfloat, Au

**CHICKEN HILL MINES, INC**

Chicken  
Gen Mgr: George Turner  
PLACER 283 mi E of Fairbanks,  
hydraulic-doser, Au

**CIRCLE DREDGING CO**

Box 1498, Fairbanks  
PLACER Crooked Cr, Circle dist, Au

**CLINE & CLINE PLACER**

Cape Yakutat  
MINE, 140 mi SE of Cordova, Au, Ag  
under devel

**COAST RANGE EXPLORATION CO**

Box 1753, Anchorage  
LODE PROSPECTS  
(Box Alaska)

**COLLINSVILLE-MINES, A PARTNERSHIP**

2057 H St., Anchorage  
GOLD PLACER, 3,500-yd dragline

& nonfloat wash pl, 100 air mi NW  
of Anchorage  
Foreman: Carl Durand

**COLORADO CREEK MNG CO**

McGrath  
Partners: John E & Richard S  
Fullerton  
PLACER, 60 mi N of  
McGrath on Colorado Cr, Au, Ag  
Prod: 3,000 cu yds

**COPLIN CONS ENTERPR**

c/o Frank Coplin, Nome  
DREDGE, Nukluk R,  
Council dist, Au

**CRANE, FRED & ASSOC**

Kotzebue  
PROSPECTS NW & N Alaska

**CUMMINS, LARRY**

c/o B & K Trading Co,  
Talkeetna  
PLACER Thunder Cr, Yentna  
dist, Au

**DAHL, ROBERT**

Talkeetna  
ST BELOW on Nugget Cr, Yentna-  
Cache Cr dist, Au

**DAWSON, PIEPER, ADAMS & ASSOC**

Box 1395, Ketchikan  
LODE PROSPECT Leduc R,  
Ketchikan dist

**DE COURCEY MT MNG CO, INC**

Box 171, Anchorage  
Pres: Ed Dodd  
VP: John McCormack  
Sec: Ray Wolfe  
Eng in Charge: Paul M Sorensen  
BED DEVIL MINE, 7 mi S of  
Sleetmute, Hg  
DE COURSEY MINE, 18 mi N of  
Crooked Creek, Hg  
Under devel

**DEGNAN, J A MNG CO**

Ophir  
PLACER on Esperanto Cr, Innoko  
dist, dragline-doser, Au

**DONLIN PLACERS**

Crooked Creek  
Owner: Robert F Lyman  
PLACER in Snow Gulch 19 mi N of  
Crooked Cr, Akiak dist,  
Kuskokwim R reg, doser, Au

**EDGECUMBE EXPLOR CO**

218 S Hudson,  
Pasadena 3, Calif  
Pres: C T Morgan  
VP: C A Haley  
Treas-Gen Mgr: G H Morgan  
Sec: A Holden  
ECHO MINE, box 756, Sitka  
undergr, Au, Ag, idle  
ECHO GRAY MILL at Silver Bay

**EDWARDS, NIKK**

Solomon  
QUIGLEY'S HYDRAULIC MINE,  
Nome dist, Seward Peninsula reg  
PLACER on Solomon R, hydraulic,  
Au

**ENSTROM & MCDUGALL**

Hot Springs  
PLACER on American Cr, Hot  
Springs dist, hydraulic-doser, Au

**ERICKSON, HALVER**

Talkeetna  
PLACER Prospect, Yentna dist, Au

**FERN GOLD MNG CO**

503 Columbus Bldg  
Spokane, Wash  
Pres: J L Drume  
VP: Martin Woldson  
Sec: L R Gordon  
FERN MINE, Palmer undergr, Au  
60-TON AMAL FLUOT MILL  
SMELTER, Tacoma, Wash

**FRANKLIN MNG CO**

Box 1881, Fairbanks  
Partners: Howard Bayless,  
Dick Roberts, Bob  
Roberts, & Ellis  
Roberts  
PLACER at Franklin & Chicken,  
hydraulic, dragline, doser, Au  
(Leased from Fred Whitehead)

**FRASCA & CO**

Box 1881, Fairbanks  
PLACER on Eagle Cr, Circle

dist, hydraulic-doser  
(Leased from Berry Holding Co)

**GILLETTE, B F**

Box 185, Nome  
PLACER on Anvil Cr, Nome dist,  
shovel-in, Au

**GILMER LODE MNG CO**

Box 88, College  
SILVERMINE, undergr, Ag, Au, Cu  
Partners: T E Olson, Gilbert Monroe

**GOLD PLACERS, INC**

Coal Creek  
Pres & Gen Mgr: EN Patty  
VP: Walter Selgmon  
Dire: E B Bull & Mrs A D McRae  
DREDGE Circle dist, Au

**GOLD STREAM MNG CO**

Box 2116, Fairbanks  
Opr: D C Broad  
MINE Goldstream Cr, Fairbanks  
dist, nonfloat, Au

**GOODNEWS BAY MNG CO, INC**

423 White Bldg, Seattle, Wash  
Pres: A O Olson  
Sec: J W Weeks  
Treas: C J Johnston  
GOODNEWS BAY PLACER,  
Flatiron  
Gen Mgr: Edward Olson

**GRANITE CREEK MNG CO**

Ruby  
Pres: Wm Carlo  
VP: Wm Carlo Jr  
Sec: P Carlo  
PLACER on Ophir Cr, 50 mi S of  
Ruby, Ruby dist, Yukon reg,  
hydraulic-doser, Au, idle

**HAGEN, OTTO AMUNC**

Eagle  
MINE Fox Cr, Eagle dist,  
hydraulic, Au

**HAMILTON, RAY & ASSOC**

Millerhouse  
Gen Mgr: Ray Hamilton  
HYDRAULIC PLACER 9 mi S of  
Millerhouse, Au, idle

**HARD, ERIC**

Ophir  
BEAR CR PLACER, Folger, Au  
Mine Supt: Eric Hard

**HASSEL MNG CO**

Box 1071, Fairbanks  
PLACER MINE, Ready Bullion  
Cr, Fairbanks dist, Au

**HAVENSTRITE OIL CO**

MNG DIV  
Candle  
PLACER Candle Cr, Fairhaven  
dist, nonfloat, Au

**HAYES, HOWARD**

Box 1136, Douglas  
A J MINE TAILINGS, Juneau  
dist, nonfloat, Au

**HEINER, LARRY**

Box 182, Petersburg  
LODE PROSPECTS, Petersburg  
& Kupreanof dists, Au

**HOLMES, WALTER**

Maycreek via Cordova  
PLACER Dan Cr, Mirina dist,  
hydraulic, Au

**HOPE MINE**

c/o R V Watkins, Box 531,  
Fairbanks  
PLACER on Deep & Faith Cr,  
hydraulic-doser, Au

**HUFFMAN, HALL MARCH & NICKELSON**

Bethel  
PLACER PROSPECT Little Kadiaguk  
Cr, Akiak dist, Au

**HUNTER CR MNG CO**

c/o Melis Jackson,  
Rampart  
PLACER on Hunter Cr, Rampart  
dist, hydraulic-doser, Au

**IDITAROD OPERATING CO**

Box 607, Fairbanks  
Opr: Frank G Edgington  
PLACER on Golden Cr, 30 mi W of  
Tanana near Kallinda Landing, Au

**INLY, NICK & ASSOC**



918 4th Ave., Anchorage  
PLACER, Gold Cr, Yentna dist, An  
Under devel

JOHNSON, ERIC &  
MCDERMOTT, PADDY  
Edgco Cr  
Prospecting

JOHNSON, HELMER  
Box 898, Fairbanks  
PLACER on Clancy Cr,  
hydraulic-dredge, An

JOHNSON, PATE & ISAACSON  
Hot Springs  
PLACER on Burton Cr, Hot Springs  
dist, An

JOKELA & LASERATION  
Box 1666, Fairbanks  
Partners: Varro Jokela  
Charles Laseration

JOHNSON, ERIC & ISAACSON  
Box 1666, Fairbanks  
Partners: Varro Jokela  
Charles Laseration

KENAI CHROME CO  
502 E 4th St, Anchorage  
LODE Red Mt, Kenai dist, Cr, An

KLOSS & DAVIS  
Partners: Herman Kloss &  
Jack Davis

K & D MINE, 2 mi from Sunset  
Cove, Petersburg dist, SE Alaska  
reg, undergr, An, Ag, Sb, Zn, Pb,  
Au

KODIE MINES  
Box 144, Fairbanks  
PLACER Dugl Cr, Kuskokwim dist,  
nonflow, An

KOUGARON FREIGHT &  
MFG CO  
Box 177, Nome  
Partners: E C Strick &  
E Turner  
PLACER 1/2 mi NW of Nome, An  
30,000 yds only  
Under devel

LANNING, VONY  
Hot Springs  
PLACER on George Cr, Hot  
Springs dist, An

LARSEN & BUCKLING  
Hot Springs  
DRIFT MINE on Woodchopper Cr,  
Hot Springs dist, An

LEE BEGS DREDGE CO  
Solomon  
Gen Mgr: Richard Lee  
PLACER on Solomon R, Seward  
Penin, bucket, An, Ag  
Prod: 7,600 yds  
Engr: Allan W Lee

LEONARD, HARRY B  
Wickham  
PLACER on Smith Cr, Kuskokwim  
dist, sluice-in, An

LITTLE MINOOK MNG CO  
Box 1558, Fairbanks  
Pres & Gen Mgr: Alvin Martin  
PLACER on Little Minook Cr,  
Rampart dist, dragline-hydraulic-  
dredge, An, Ag  
Prod: 600 yds

LONG CR MNG CO  
Ruby  
Gen Mgr: Isaac Tillson  
PLACER at Long Cr, Hydraulic-  
dredge-dragline, An, Ag

LUCKY HELL MINE  
Bollie  
Owner: J J Mattoni  
MINE 1/2 mi W of Bollie, undergr  
An, Ag, Pb, Cu, Mo

LUCKY SEVEN MINE  
Millerhouse  
Opr: Walter Roman  
PLACER on Matadon Cr,  
Circle dist, dragline-hydraulic, An

MAURE, ERNEST  
511 4th Ave, Fairbanks  
PLAST CHANCE CR MINE, open pit  
and placer, An

SLATE CR MINE, Kuskokwim dist, An

MEIDRUM, W H  
Chickoo  
No 1 above Discovery Claim on  
Chickoo Cr, 40 mi dist, open pit  
and placer, An

MISCOVICH BROS  
Box 714, Fairbanks  
PLACER on Otter Cr, Iditarod  
dist, Yukon R reg, discovery claim, An

MUMTRAK MINERS  
Platinum  
Pres & Gen Supt: James A  
Nyström  
VP: James Nyström  
PLACER 21 mi from Platinum, An  
Prod: 300 yds daily

MUNZ, WILLIAMS S  
Nome  
PLACER on Rock Cr, Council dist,  
Seward Penin reg, An

MURNION, JAMES  
Seward  
PLACER on Ester Cr, Inocho  
dist, An

NATIVE DISMUTH, INC  
Box 187, Nome  
Pres & Gen Mgr: O E Margraf  
VP: D M Russell  
CHARLEY CR DISMUTH MINE, 1/2  
mi N of Nome, undergr, Sb, Bi, Sn,  
Au  
Under devel

NESLAND & CO  
Wickham  
PLACER on Vermont Cr, Kuskokwim  
dist, Yukon R reg, dragline-dredge,  
An

NEW YORK - ALASKA GOLD  
BREDGE CORP  
1618 Smith Tower, Seattle, Wash  
Pres & Man Dir: J N Crowley  
VP: G C King  
Sec: Mark Mathewson  
Treas: Fannie Barley  
Purch Agt: L E Robbins  
NEW YORK - ALASKA MINE, 40  
mi NE of Bethel, placer,  
3 dredges, dragline, An  
Res Mgr: Wm H Race  
Asst Mgr: M F Bailey  
Elec Engr: Clarence Clark  
(See NY, Wash)

NO GRUB MNG CO  
1000 25th St, Seattle & Wash  
MINE, Fairbanks, 60 mi E of  
Fairbanks, placer  
Under devel

NORTH AMERICAN  
DREDGE CO  
Flat  
Owner: Alex Mathewson  
PLACER at Flat, Iditarod dist,  
2,500 yd bucketline, dredge, An

NORTHERN TIN CO  
530 E 9th St, Seattle & Wash  
Pres: Axel Palmgren  
VP: Andrew G Olson  
Gen Mgr & Sec: George Ramotid  
Asst Gen Mgr & Purch Agt:  
Wm Ramotid  
PLACER OFR, Buck Cr, 120 mi  
NW of Nome, So, An  
Mine Supt: George Ramotid

NOVATNEY, MR & MRS R A  
Box 1541, Juneau  
Pres & Gen Mgr: R A Novatney  
Sec & Treas: Dorothy Novatney  
WILLIE LEDGE & LODE MINES  
Box 1617 Ketchikan, surface, placer  
Under devel

NOVATNEY, JOHN  
Flat  
DREDGE, Otter Cr, Iditarod  
dist, An

OLIVE CREEK MINES  
Box 513, Fairbanks  
Gen Mgr: Carl Parker  
PLACER on Olive Cr, 80 mi NW  
of Fairbanks, dragline-dredge, An,  
Ag

OSTNES, LARS & CO  
Fortuna Ledge  
Mgt: Lars Ostnes  
PLACER on Willow Cr, Marshall  
dist, Yukon R reg, dragline-  
dredge-hydraulic, An

P & H MINING CO  
Miller House  
Partners: P D Parker, J W  
Raymond, F G Hopkins  
MATADON CR PLACER, 140 mi  
N of Fairbanks, An, Ag  
Prod: 1000 yds

PILGRIM, EARL R & CO  
Box 1594, Fairbanks  
Gen Mgr: Earl R Pilgrim  
STAMPEDE MINE, 110 mi S of  
Fairbanks, undergr, Sb, Explor  
under DMEA  
K9-TON GRAY MLL  
Idis

PITTS, E H  
Big Lake  
LAKE CR PLACERS, Big Lake,  
hydraulic, An, Ag

PRICE, STAN  
Wickham Bay  
PLACER, 1/4 mi from Coast  
head of deep water, hydraulic  
dredge, An, Zn

PRINGLE, A W  
Hot Springs  
MINE on Rhode Island Cr, Dover-  
hydraulic, An

PRINCE CR MNG CO  
Flat  
Owner: Harry Agoff  
PLACER on Prince Cr, Iditarod  
dist, Yukon R reg, hydraulic, An

PROSPECTORS, INC  
544 2nd Ave, Fairbanks

PURDY, FRED & ARTHUR  
Chickoo  
PLACER on Myers Fork, 40 mi  
dist, Yukon R, reg, dredge-  
hydraulic, An

PURKEYPILE, I W  
Box 579, Fairbanks  
PLACER on Toolikoma Cr,  
30 mi W of Tanana, Explor only,  
Sb, An

QUAIL CR MNG CO  
171 Hall St, Fairbanks  
Co-owners: Willie H Redig,  
Mc C Houghahl  
PLACER on Quail Cr, Rampart  
dist, Yukon R reg, dredge-  
hydraulic, An

QUEBEC METALL IND, LTD  
c/o J Bonkowski, Box 40, Nainas  
PLACER & LOSE, near Kluhwan,  
Juneau dist, Fe

RAINBOW MNG CO  
Box 388, Nome  
PLACER, 90 mi N of Nome,  
placer, An  
Under devel

RENSHAW, A L & BROWN  
Box 1575, Anchorage  
GOLD CONE MINE, Willow Cr,  
dist, Ind, Au

ROBINSON, GEORGE F  
Boundary  
PLACER on Wade Cr, 40 mi  
dist, Yukon R reg, An

ROSENBERG & REED  
Ophir  
Pres: T Rosenberg  
PLACER on Yankee Cr, Inocho  
dist, hydraulic-dredge-dragline,  
An

RUNNELS, R L  
Gulkana  
PLACER on Millers Gulch, An

SAVAGE & MATHESON  
Ophir  
Gen Mgr: Hugh Matheson  
PLACER on Spruce Cr, hydraulic-  
dredge, An  
Idis

SCHAEFER, RUSSEL R  
Crooked Creek  
PLACER on 47 Cr, Kuskokwim  
reg, dredge-sluice boxes, An, W  
CINBAR CR PLACER,  
Kuskokwim R, Ag

SCHWAEDELL  
Fairbanks  
PLACER on Myrtle Cr,  
Kuskokwim dist, Yukon R reg, An

SHOWBIRD MNG CO, INC  
Box 1719, Anchorage  
Pres & Gen Mgr: Chris Pyleson  
VP: H A Farve  
Sec-Treas: Charles J Johnson  
SHOWBIRD MINE, 23 mi N of Palmer  
undergr, Au

SLOT MILL  
Idis

SOURDOUGH DREDGE CO  
Nome  
Partners: Chester Milligan, Jack  
LeCross, H E Jansway  
MINE at Council, bucketline, An

STAMPEDE MINES  
Box 1594, Fairbanks  
LODE, Stampede Cr, Kuskokwim  
dist, Sb Explor  
MILL

STANICH BROS  
Fairbanks  
PLACER on Porcupine Cr, An

STANTON, HAROLD  
Talkeena  
PLACER on Thunder Cr, Yentna-  
Cache Cr dist, hydraulic, An

STRANDBERG & SONS  
525 4th Ave, Anchorage  
PLACER, Colorado Cr, Inocho  
dist; Indiana R, Hughes dist;  
Eureka Cr, Hot Springs dist, An  
LODE PROSPECT, Yentna dist, An  
NIXON FORK MINE, McGrath dist

STEEN, HARRY & OORIS  
Ophir  
PLACER on Otter Cr, dredge, An

STEPHENS, V  
Box 774, Anchorage  
PLACER on Nugget Cr, An

STUVER, JULIAN  
Flat  
PLACER on Happy Cr, Iditarod  
dist, hydraulic, An

SWANSON BROS  
Rampart  
Partners: Albert & Emil Swanson  
PLACER on Hunter Cr, 4 mi S  
of Rampart, hydraulic-dredge, An

SWATCH, AL  
Fairbanks  
PLACER on Corpus Christi Cr, An

SWEEPSTAKE MINES  
Haycock  
Owner: Patrick J Bliss

PLACER 20 mi NW of Haycock on  
Sweepstake Cr, hydraulic-dredge-  
dragline, An

TARASKI, A J  
Talkeena  
PLACER on Cache Cr, Yentna  
dist, hydraulic, An

TIGER TALISMAN PLACER  
Box 284, Nome  
Gen Mgr: J H Alexander  
250-yd hydraulic-dredge, An, Ag

TUCKER, S A  
Haycock  
PLACER on Sweepstake Cr, Koyuk  
dist, Yukon R reg, An

TWET, W B & SONS  
Teller  
PLACER on Dahl Cr, Kongsrook  
dist, hydraulic, An

ULEN, E J  
Wickham  
PLACER on Nolan Bench, Kuskokwim  
dist, hydraulic, An

U S SMELTING, REFINING  
& MNG CO  
Box 1170, Fairbanks  
VP & Gen Mgr, Alaskan Opr:  
J D Crawford

FAIRBANKS DEPT, 8 gold dredges  
at Chickin Cr  
Mgt: J C Boswell  
Supt, Thawing & Stripping:  
T A Loftus  
Dredge Supt: W A LePon  
Cashier: L E Linck  
NOME DEPT, 4 gold dredges  
Mgt: C S Glavinovich  
Supt: W A Glavinovich  
Cashier: Robert Baldwin  
(See Ariz, Utah, New Mex, NW)

U S STEEL CORP  
525 William Penn Pl,  
Pittsburgh 30, Pa  
EXPLOR, SE Alaska  
(See Ala, Ky, Mich, Miss,  
Mont, Pa, Tenn, Utah)



## ALABAMA

## U S TIN CORP

200 Jones Bldg., Seattle 1, Wash  
 Chmn: H R Fischmiller  
 VPS: P H Furey, A F McIntosh  
 Sec: W L Gibson  
 Treas: J J Gilmour  
 Met: R J McCrary  
 Gen Supt: Everett Hoggland  
 LOST RIV TUN MINE, Lost R.  
 90 mi NW of Home, undergr, placer  
 cover, Sn, WO<sub>3</sub>  
 Prod: 180 tons  
 Mine Supt: H A Murray  
 106-TON GRAY MILL  
 Mill Supt: R J McCrary

## UOTILA &amp; HARD

Ocala  
 Gen Mgr: Gus Uotila  
 OPHIR CR PLACER, Au

## WACKWITZ, FRED

Box 1395, Fairbanks  
 PLACER on Bedrock Cr,  
 Fairbanks dist, short-in, Au  
 LODGE, head of Cleary Cr, Pb

## WARWICK MINES

Box 907, Fairbanks  
 Gen Mgr: Andy Warwick  
 Gen Supt: W M Warwick  
 Acct: H M Warwick  
 PLACER on Gertrude Cr, 2 mi  
 NE of Livengood, hydraulic  
 placer, Au  
 GRAY MILL

## WASKEY, WREN &amp; WOLFE

Box 31, Dillingham  
 RED TOP MINE, 18 mi N of  
 Dillingham, surface, Hg

## WEAVER, VERNON, &amp; RAMBAUD

Chickasaw  
 PLACER on Napoleons Cr, Au

## WEINARD, FRED

Candle  
 PLACER on Jump Cr & Mud Cr,  
 Fairhaven dist, Seward Penin reg,  
 dragline-doser, Au

## WESTERN ALASKA MNG CO

Box 131, Spenard  
 Opr: R J Anderson  
 PROSPECT, Russian Mtns, Aniak  
 dist, Hg

## WHITE BEAR LODGE

c/o Archie Ferguson, Kotzebue  
 LODGE, Independence Cr, Fairhaven  
 dist, Pb, Ag  
 Prospect

## WILKINSON, R R

Richmond Beach, Wash  
 PLACER on Miller Cr, Circle  
 dist, nosfloat washing pl, Au

## WILLIAMS MNG CO

Fairbanks  
 PLACER, Gilmore Cr, Fairbanks  
 dist, nosfloat, Au

## WIKUM BROS

Box 481, Nome  
 PLACER on Dune Cr, Kougark  
 dist, dragline-doser, Au

## WITBROW, A

Fairbanks  
 PLACER, OFR on Bedrock Bar,  
 Noyukuk B, Au

## WOLF CR MNG CO

Box 141, Fairbanks  
 Pres: Andrew Anderson  
 VP: Gus Gullikson  
 Gen Mgr: M Olson  
 PLACER, 36 mi N of Fairbanks,  
 stripping cover, Au  
 Under devel

## YUKON MNG CO

225 E 2nd St, Seattle 5, Wash  
 MINE, Koko Ladg, Au  
 Mine Supt: Gen Shematad  
 Idle

## ZAISER, CLARENCE

Prosser  
 PLACER on Timber Cr, drift, Au

## ZENDA GOLD MNG CO

366 Columbia Bldg, Seattle, Wash  
 CAPE CR MINE, 150 mi W of  
 Paines, Sn

## ZURKE, W J

Miller Ranch  
 PLACER on Mastodon Cr, Circle  
 dist, Au

## ALABAMA PLAKE

## GRAPHITE CO

320 Comer Bldg,  
 Birmingham  
 Pres: W L Shumate, Jr  
 VP: W L Moore  
 Sec: J F Berry Daugh  
 POCAHONTAS MINE, 4 1/2 mi  
 W of Ashland, Ala, Flake  
 graphite, mica  
 Gen Mgr: W L Shumate, Jr  
 Met: L B Adams  
 Geol: L H Williams  
 Idle

## ALCO MNG CO

Etahua  
 MINE & MILL, bauxite  
 Supt: R E Wilson

## ARRINGTON MNG CO

Cedarston, Ga  
 WASH PL, Glenwood, &  
 Brundidge, Pike Co, Fe

## B &amp; S MNG CO

Greenville  
 WASH PL, Butler Co

## BIBB MNG CO

Brundidge  
 WASH PL, near Brundidge

## JACKSON &amp; PRICE

Columbia  
 WASH PL, near Columbia

## GREENSHAW MNG CO

Greenville  
 WASH PL, Butler Co

## DIXIE MINE INC

Sylacauga  
 MINE, near Micaville, mica

## GEORGIA TALC CO

Chatsworth, Ga  
 TALC MINE, near  
 TALC MILL, Alpine  
 (See Ga)

## GLENWOOD MNG CO

Glenwood  
 WASH PL, Glenwood area

## GREENVILLE MNG CO

Greenville  
 WASH PL, Butler Co

## MINERAL PROD CORP

Box 117, Bunkard  
 VP: Robt Russell  
 PROSPECTS CLAIMS, near  
 Mitchell Dam, Coosa Co,  
 gneissite  
 PILOT MILL near Rockford  
 Mite

## REPUBLIC STEEL CORP

Birmingham  
 EDWARDS MINE, Birmingham,  
 undergr, Fe

Mgr: B M McCrackin  
 Supt: B C Jones  
 Elec Engr: J Donohue  
 Ch Engr: R D Watt  
 Maint Engr: E Read

Prod: 500,000 tons per year

SPAUDLING MINE, Birmingham

undergr, surface, Fe

Supt: J G Blackwell

Prod: 400,000 tons per year

GRAY CONC

Prod: 250,000 tons per year

BLAST FURNACE, E Thomas, Ala

BLAST FURN & STEEL PL

Gadsden

So Dist Mgr: E I Evans

(See Mich, Minn, NY, Ohio)

## SHOOK &amp; FLETCHER

SUPPLY CO  
 1014 1st Ave, Birmingham

Pres: F G Shook

VP: J W Shook

Gen Mgr: A M Shook III

Sec: J H Adams

Purch Agt: L M Quick

ADKINS, WARNER & BLACKBURN

MINES, Russellville, surface,

iron ore

## STARRETT &amp; LETT

Frytown  
 M & G MINE, Clay Co, mica

## Geol: H G Pallister

## BARFIELD MINE

HURST MINE, Clay Co, trimmed  
 & sheet mica

## U S PIPE &amp; FOUNDRY CO

Birmingham  
 Pres: C S Lawson  
 VP: Fred Osborne  
 Gen Mgr: Eugene Coother  
 Met: R H Stacey  
 Elec Engr: L E Shiffman  
 Sec: J W Brennan  
 Gen Supt: J W Nicol  
 Geol: Jack Morris  
 Mech Engr: W L Adamson  
 Safety Engr: J A Downey  
 Purch Agt: H E Cross  
 RUSSELLVILLE MINE, 2 mi E  
 of Russellville, Ala, surface, Fe  
 Prod: 750 tons  
 Mine Supt: SA Britton  
 Asst Mine Supt: Roy Shirley  
 Mine Foreman: Robert Norton  
 Mine Engr: W E Hobson  
 HEAVY MEDIA MILL  
 Prod: 900 tons of limonite per day  
 BLAST FURNACE, Birmingham  
 Supt: Dan Watkins  
 Asst Supt: Geo Routledge  
 RUFFNER #2 MINE, Irondale, 1 mi  
 E of Birmingham, undergr, iron ore  
 Prod: 750 tons  
 Mine Supt: P M Cassidy  
 Mine Foreman: Wm Sahms  
 Mine Engr: Geo Jones  
 HEAVY MEDIA MILL, 1,000 tons  
 of hematite per day  
 Mill Supt: C M Ellsberry  
 Assayer: PM Walcott  
 SLOSS #2, Bessemer, 12 mi W  
 of Birmingham, undergr, Fe  
 Prod: 1,000 tons  
 Mine Supt: J W Russell  
 Asst Supt: P M Snow  
 Mine Foreman: E Thompson  
 Mine Engr: Geo Jones  
 BELGREEN MINE, Russellville,  
 surface, Fe

## WOODWARD IRON CO

Woodward  
 Pres: John E Urgardt  
 VP: W R Bond  
 Sec: D T Turnbull  
 Gen Supt: John Hager  
 Met: F U Leonard  
 Safety Engr: Stanley Mooney  
 Purch Agt: H K Stokes  
 FYNE MINE, 8 mi S of  
 Bessemer, undergr, iron ore  
 Mine Supt: T W Davis  
 Asst Mine Supt: W H Thompson  
 Mine Engr: S E Sullivan  
 BLAST FURNACE, Woodward  
 Prod: 772,622 net tons per year  
 Supt: J B Casey  
 Asst Supt: C Y Huff

## U S STEEL CORP

TENNESSEE COAL & IRON DIV  
 Box 599, Fairfield  
 Pres: A V Wiebel  
 Exec VP: John Pugsley  
 VP of Oper: J M Spearman  
 Mgr, Raw Mat: E E Kirk  
 Ch Engr, Raw Mat: E B Nelson  
 Purch Agt: L C Teague

## IRON ORE MINES &amp; COND PL

1 undergr mines near Bessemer  
 Cap: \$601,000 net tons crude iron  
 ore per year  
 Gen Supt: A W Beck, Jr  
 Supt, Muscoda Div: G M Neal  
 Supt, Wemash Div: P J Zukow  
 Supt, Ore Cond Pl: C E Lacy  
 (See Mich, Minn, Mont, NY,  
 Tenn, Utah)

## ARIZONA

## ABE LINCOLN COPPER CO

Wickenburg  
 MINE, Maricopa Co, Cu  
 Mgr: E I Mills  
 Idle

## ABRIL MINE

Box 769, Tucson  
 MINE, Tombstone, Cochise Co,  
 Zn, Cu  
 Mgr: S B Owens  
 Idle

## ADAMS #3 MINE

Box 31, Yuma  
 Opr: H C Hudson  
 MINE, Yuma Co, Ag, Pb  
 Idle

## AKREN MINES

2207 N 24th St, Phoenix  
 Pres: J A Akren  
 Gen Mgr: Fred Jenkins  
 PIONEER MINE, 20 mi E of  
 Florence, undergr & surface Au,  
 Ag, Cu, Pb  
 Under devel

## ALKEY MINE

Tombstone  
 Owner: E B Escapole  
 Pb, Ag  
 Mgr: Jeff Humphrys  
 Idle

## ALLISON MINE

Box 749, Tucson  
 Opr: Maurice Hedderman &  
 Olin B Dodd  
 MINE, Pima Co, Au

## ALPINE DEVEL CO

Dragon  
 PRINCESS GP, Cochise Co, Cu, Ag

## ALTUDA MINES, INC

P.O. Box 1743, Yuma  
 Pres: James V Spagon  
 Gen Mgr: Harry E Hamilton  
 VP & Asst Gen Mgr: David C Ochs  
 ALTUDA MINE, 25 mi SE of Gila  
 Bend, undergr, Au, Ag  
 Idle

## AMERICAN ASBESTOS

CEMENT CO  
 c/o Geo W Kohl, 115 W Oak St,  
 Globe

## AMERICAN COPPER CO

312 Calif Bldg, Stockton, Calif  
 Pres & Gen Mgr: Paul H Boether  
 VP: Max Elson  
 Sec: W H Anderson  
 Gen Supt: L C Wymann  
 Purch Agt: Paul H Boether  
 RUSSET MINE, 9 mi SW of Superior,  
 undergr, Cu, Au, Ag  
 Idle

## AMERICAN FIBRE CO

Globe  
 ASBESTOS MINE

## AMERICAN SMELTING &amp; REFINING CO

WESTERN MINT DEPT SW DIV  
 813 Valley Nat'l Bldg, Tucson  
 Mgr: T A Snedden  
 Ch Geol: Kenyon E Richard  
 TRENCH UNIT, Patagonia, undergr  
 Pb, Ag, Zn  
 Supt: D R Jameson

## 250-TON FLOT MILL

HAYDEN PLANT, Hayden, 1800-ton  
 smelt & conv, Cu  
 Supt: F J Downey

## SILVER BELL UNIT

810 Valley Nat'l Bldg, Tucson  
 Mgr: Reed F Welch  
 SILVER BELL UNIT  
 Silver Bell  
 Supt: D R Purvis  
 Prod: 7,000 tons Cu  
 URANIUM EXPLOR, Navajo Indian  
 Reservation

## AMERICAN ZINC, LEAD &amp; SMELTING CO

St Louis, Mo  
 HILLTOP MINE, Pb, Zn, Ag, Cu  
 Portal  
 Gen Supt: R L Brittain

## ARCHA ASBESTOS CO

Box 1593, Globe  
 REYNOLDS FALL ASBESTOS MINE

## ARI - MICH MINES, INC

Box 701, Prescott  
 Pres & Gen Mgr: C W Gohrieason, Sr  
 VP: Harold Gates  
 Sec: Lynwood Wells  
 Gen Supt: C W Gohrieason, Jr  
 CATOCTIN MINE, 12 mi SW of  
 Prescott, undergr Ag, Au, Pb,  
 Zn, Cu

## ARI - TEX CO

Box 567, Bisbee  
 Gen Mgr: R A Craig  
 FLORIDA NO. 1 & BLACK  
 DIAMOND, open pit, Mn  
 Gen Supt: Joe Dutton  
 Mech Eng: James Baize  
 Prod: 500 tons

**ARIZONA ASBESTOS MNG CO**  
c/o A N Dwyer, Box 925, Globe  
EVANSBURG MINE, asbestos

**ARIZONA COPPER MINES INC**  
Oracle  
Pres: J E Nicolson  
Gen Mgr: W R Shanklin  
MINES, 20 mi N of Tucson, Cu  
Supt: Louis Stockath  
Idle

**ARIZONA EASTERN  
FLUORSPAR CORP**  
Box 186, Duncan  
Pres: Leo A Destrack  
VP: Paul Kouri  
Gen Mgr & Met: LK Diffenderfer  
Sec: Fred Huchert  
Cons Eng: Frank R Wicks  
LEWISTON FLUORSPAR MINE,  
6 mi S of Duncan, undergr  
50-TON FLOT MILL, Duncan  
Mill Supt: LK Diffenderfer  
Mill Foreman: Salvador Garcia  
Assay: Harryton A Dunn

**ARIZONA GYPSUM CO**  
Wilcox  
Mgr: JM Champlin  
MINE in Pinal Co, gypsum

**ARIZONA MINE, THE**  
Box 143, Humboldt  
Gen Mgr: Verdon Alexander  
ARIZONA MINE, THE, 2 1/2 mi  
W of Humboldt, Az, Ag, Pb, Zn  
Under devel

**ARIZONA MNG CORP**  
Box 182, Chicago  
Sec: PH Lohr, 17 John St,  
New York 38, NY  
SAMOA GROUP, Mohave Co,  
Au, Ag, Pb, Zn, Cu

**ARIZONA METALS CO**  
Box 1268, Kingman  
Pres & Gen Mgr: RR Langley  
SUMMIT ALPHA MINES, Au, Ag,  
Cu, Pb, Zn

**ARIZONA PORTAL  
CEMENT CO**  
Ridgely  
Mgr: AL McCall  
MINE, MILL, Pima Co, limestone

**ASH PEAK LEASE**  
Box 208, Duncan  
COMMERCIAL & SHAMROCK  
MINES, Ag  
Gen Mgr: Howard Motter

**ASSOC MNG CO**  
Parker  
Pres: AC Burger  
RIO VISTA, BILLY MACK, SUE,  
CAPILANO, MAHMON & LEON  
HILL MINES, Cu, Au  
Gen Dir: AG Lofquist  
Under devel

**ATHLETIC MNG CO**  
Box 754, Safford  
Pres: Raymond F Orr  
VP & Gen Mgr: Harris L Horton  
Sec: Andor K Orr  
HEAD CENTER & IRON CAP MINES,  
13 mi NW of Klotzky, undergr, Zn,  
Pb, Cu, Ag, Au

Mine Supt: A Bueworth  
Mine Foreman: Elmer Kidd  
Mine Eng: Kendrick Abell  
Prod: 100 tons  
PAHAMA MINE, Zn, Pb, Ag  
Mine Eng: Kendrick Abell  
Under devel  
100-TON FLOT MILL, Klotzky  
Mill Supt: Thomas Darnall  
Assay: Ervin Kugenski

**B & K MINING CO**  
P O Box 4434, Phoenix  
Pres & Gen Mgr: AM Kalaf  
VP: WW Simon  
Sec-Treas: Lee Newton  
ATLAS MINE  
P O Box 6, Red Rock  
10 mi SW of Red Rock, undergr,  
Zn  
Under devel  
100-TON FLOT MILL, 10 mi SW  
of Red Rock

**BAGDAD COPPER CORP**  
Bagdad  
Pres: JC Lincoln  
VP: Frank Seel  
Sec: RH Jamison  
Gen Mgr: Ernest R Dickie  
Asst Gen Mgr: GW Colette

Met: BB Howell  
Elec Eng: WD Deacon  
Mech Eng: C Hammen  
Safety Eng: BJ Henderson  
Purch Agt: JW Scholthuis  
MINE 120 mi N of Phoenix,  
open pit, Cu, Mo, Ag  
Prod: 2,500 tons  
Mine Supt: Olaf Nordrum  
Mine Foreman: DS Pike, HT Stewart  
5,500-TON FLOT MILL, Bagdad  
Mill Supt: Gaylen Guest  
Mill Foreman: HP Mullins,  
D van Tilburg, AT Weatherhead  
Assay: DT Holmes

**BANNER MNG CO**  
3043 Comar, Stravenna, Tucson  
Pres: ES Bowman  
Gen Mgr & VP: AB Bowman  
Sec: JE Hogle  
MINERAL HILL MINE, Tucson,  
undergr, Cu  
Mine Supt: BW Venabig  
Genl: FD McKenzie  
Mech Eng: EE Bray  
Met: Faria Brugh  
Elec Eng: H Hodges  
Mine Foreman: Wm Anderson  
Mine Eng: Henry Grunstedt  
100-TON FLOT MILL, Pima Co  
Mill Supt: Frank Horton  
Assay: RG Miranda  
(See New Mex)

**BARTMUS, BROCK & DUKE**  
Kingman  
Owners: Peter Bartmus, Jr.,  
Richard Brock, Stanley Duke,  
Earl Duke  
SIXTY-THREE MINE, 13 mi from  
Kingman, undergr, Ag

**BEAR CANYON MNG CO.**  
Globe  
ASBESTOS MINE  
BEARD, AL A  
Box 225, Kingman  
WHITE EAGLE MINE, Mohave Co,  
Au, Ag, Cu

**BEYERLE, RUPERT & SON**  
Nogales  
EASTERN EST MINE, 14 mi S of  
Patagonia, undergr, Mn  
Prod: 200 tons per mo

**BIG CHIEF GROUP**  
Box 145, Prescott  
Owners: Fred L Kohlthurner &  
William Lambuth  
MINE, Yavapai Co, Au, Ag, Pb  
Idle

**BIG HOLE MNG CO**  
Yavapai Co

**BIG SIX CO**  
Box 605, Eloy  
Pres: Jim Brookbank  
VP: Bill Stanfield  
Sec: M Kinsler  
Treas: VA Cordell  
Purch Agt: WA Knapton  
QU MINE, Globe  
Gen Mgr: MC McClain  
Asst Mgr: H Christian  
Geol: J Vincas  
Elec Eng: VO Johnson

**BISMUTH MINE**  
Portal  
Pres: MS Sched  
VP: S Harris  
Gen Mgr: JL Sched  
Sec: Grace Sched  
Geol: JL Sched  
MINE, 2 1/2 mi SE of Portal,  
undergr, Bi<sup>2</sup>  
Under Devel

**BLACK, W L**  
Box 1038, Globe  
SO & SO MINE, 15 mi S of  
Globe, undergr, Ag, Pb  
Under devel

**BLACK CANYON COPPER CO  
INC**  
Box 1531, Phoenix  
Pres: JW England, Jr  
VP: Jerome Kaye  
Sec-Treas: Ben Silverman  
KAY COPPER MINE, Rocksprings,  
undergr, shaft, Cu, Zn, Au, Ag  
Idle  
(Leased by Chisholm Mng Corp)

**BLACK CHIEF MINE**  
Bouse  
Owner: DC Townsend  
Mn  
(Leased to McElvaney & Harrison)

**BLACK MESA CLAIM**  
Box 1885, Yuma  
Leases: Alan C Madden  
MINE, Yuma Co, Cu

**BLACK PEARL MNG CO**  
Box 248, Bagdad  
Pres: EA Schulte  
VP: LK Lindahl  
Sec-Treas: JH Cavier  
BLACK PEARL MINE, 18 mi NE  
of Bagdad, undergr, WO<sub>3</sub>  
Prod: 40 tons  
Gen Mgr: JH Cavier  
Mine Supt: KK Pommala  
40-TON GRAY MILL

**BLACK QUEEN MINE**  
Agula  
Mgr: Fred Seiforth  
MINE, Maricopa Co, Mn

**BLOOD NELLEY (UNIDA)**  
Box 484, Wickenburg  
Opr: N S Oberma  
MINE, Yavapai Co, Cu  
Idle

**BLUE BONNETT # 1-3**  
7th St, Cottonwood  
Owner: Hazel F Lockridge  
Mgr: Charles C Lockridge  
MINES, Coconino Co, Ag, Cu

**BLUEJAY, WEST COAST,  
GOODLUCK & JUDGE MINES**  
Box 3, Cherry via Dewey  
Owners: Thomas Hutchiff &  
Robert Ayres  
MINES, Yavapai Co, Cu  
Under devel

**BOMBOY GROUP**  
Box 264, Superior  
MINE, Pinal Co, Au, Ag, Cu  
Idle

**BONANZA MNG CO**  
Wenden  
Pres & Gen Mgr: H Ray Tobin  
BONANZA MINE, 8 mi N of  
Wenden, undergr, Cu, Au  
Supt: Floyd Brown  
50-TON GRAY MILL  
Idle

**BOSLEY MNG CO**  
313 W Dale, Flagstaff  
Pres & Gen Mgr: HV Bosley  
VP: JC Bosley  
DENNISON MINE, Long Valley,  
60 mi S of Flagstaff, undergr,  
surface, placer, Mn  
Prod: 10 tons  
Mine Supt: JC Bosley

**BOTT, GEORGE H**  
Box 18, Wilcox  
BOTT MINES, Aravaipa dist,  
Klotzky, Zn, Pb, Ag, Au  
Idle

**BOYD & FORTNER**  
Wickenburg  
Partners: Bert Boyd &  
HH Fortner  
LUCKY MICA #1 MINE, 11 mi S of  
Wickenburg, spodumene, lepidolite

**BUCKEYE MICA CO**  
Box 418, Buckeye  
Pres & Gen Mgr: HG Smith, Jr  
VP: HG Smith, Jr  
Sec: W Peskova  
BUCKEYE GROUP, 2 1/2 mi S of  
Buckeye, undergr, mica (Muscovite)  
Sericite, Bx, Feldspar  
Supt: A Duncan  
Asst Supt: C Murphy  
Foreman: CV Hill  
Prod: 100 tons  
LUCKY CHANCE 1-2-3, 9 mi W  
of Quartzsite, Sericite  
Prod: 25 tons  
Under devel  
100-TON DRY & WET GRINDING  
MILL  
Supt: JG Smith, Jr  
Foreman: Wayne Watts

**BULL CANYON TUNGSTEN  
MINE**  
Box 43, Yuma

**BULLARD GROUP**  
Box 121, Congress  
Owner: Bullard Estate  
c/o Charles O Mathews, Mgr  
MINE, Yavapai Co, Au, Cu  
(Leased to Boller & Firestone,  
Box 783, Wickenburg)

**BURNEY MINES, INC**  
Box 5110, Tucson  
Pres & Gen Mgr: RA Burney  
VP: HH Martin  
Sec-Treas: Lilla Burney  
STOVE LID & AMPHITHEATER,  
MINES, 6 mi S of Oracle, undergr,  
Pb, Zn, Cu, Ag  
Idle  
50-TON FLOT MILL, at Copper  
Ross claim

**BY CHANCE MINE**  
c/o Col Frank Childs, Ajo  
Opr: Von R Calloway  
MINE, Pima Co, Ag, Cu

**C & B MINE**  
2433 W Belmont Ave, Phoenix  
Opr: CF Moores  
MINE, Gila Co, Ag, Pb, Zn  
Idle

**C A R MINES, INC**  
Box 1003, Kingman  
Pres: SH Reither  
VP & Gen Mgr: AW Smith  
DELA POUNTAINE & COULD  
MINES, 1 mi N of Kingman, undergr,  
Pb, Zn, Ag, Au, Cu

**CACTUS MINES**  
706 16th St, Douglas  
Owners: KC Moon & AJ Heischman  
CACTUS & IRISH BOY MINES  
Swanton Mts, 20 mi N of Douglas,  
undergr, Pb, Ag  
Idle

**CALARI MNG CO**  
406 Kress Bldg, Long Beach 12,  
Calif  
Pres & Gen Mgr: LF Abrecht  
Sec: CM Smith  
Gen Supt: VH LeMay  
RUTH MINE,  
Box 341, Prescott  
8 mi S of Prescott, undergr, Zn,  
Pb, Cu, Ag, Au  
Idle

**CALIF STEEL PROD CO**  
Richmond, Calif  
Treas: CF Fannin  
SILVER BELL OF COLUMBIA  
MINES, Pinal Co, Pb  
(Leased to United Aris Mines)

**CAMPBELL, GEO W & SON**  
Box 701, Salina  
BLUE EAGLE CLAIMS, WO<sub>3</sub>

**CAMPBELL, J A**  
Box 1145, Wickenburg  
HIG SPAR, WEST END, JUMBO  
MINES, flourspar  
Under devel

**CARLOTA COPPER CO**  
830 W Latham, Phoenix  
Pres & Gen Mgr: John L Alexander  
CARLOTA MINE, 15 mi W of Miami,  
surface, Cu  
Idle

**CASH MINE**  
Prescott  
Mgr: Jack Orr  
MINE in Yavapai Co, Au, Ag, Cu,  
Pb, Zn

**CEDAR TALISMAN CONS  
MNG CO**  
309 Wilshire Dr, Phoenix  
Pres & Gen Mgr: J Walters Jr  
FRENCH LILY MINE, Cleator,  
undergr, Au, Ag, Cu, Zn, Pb  
50-TON FLOT MILL

**CHAPMAN, HARRY ALLEN**  
P O Box 949, Tucson  
Gen Mgr & Geol: Cordy C Calvia  
BLACK CHIEF MINE, 43 mi SW of  
Tucson, undergr, diamond core  
drilling (4 claims), Mn  
GOLD BULLION GP, 67 mi SW of  
Tucson, diamond & sampling,  
Au, Ag, Pb, Cu, Mo, WO<sub>3</sub>

**CHEMI - COTE PERLITE CORP**  
2030 Live Oak, Dallas, Tex  
Pres: GT Ball  
VP: Frank Mitchell  
Sec: Don Gibson  
MARY T & SANDY #2 MINES, 3 mi  
SW of Superior, open pit, perlite  
Gen Mgr: MC Magnett  
Mech Eng: WC Massey

**CHESSER & CO.**  
Window Rock  
URANIUM EXPLOR, Navajo  
Indian Reservation

## CHILITO MINE GROUP

Box 1045, Hayden  
Owner: BC Velasco  
MINE, Gila Co., Cu

## CHILSON, RICHARD E

Box 1778, Tucson  
KING-EXILE MINE, 18 mi E of  
Saburra, undergr., Cu, Ag  
Prod: 30 tons

## CLIMAX URANIUM CORP.

Box 887, Grand Junction, Colo  
URANIUM EXPLOR., Navajo  
Indian Reservation  
(See Colo., NY, Utah)

## COBRA CHEMICAL CO., INC

106 N Cortez St., Prescott  
Pres: PD Hesse  
VP: AL Pouch  
Sec-Treas: NM Hesse  
COBRA & McMAHON GPS, 27 mi S  
of Prescott, open pit, Cu  
Under devel

## COLBURN, E A JR

Box 153, Congress  
CONGRESS MINE, 3 mi N of  
Congress Jt., undergr., Au, Ag, WO<sub>3</sub>

## COLORADO RIVER PLACER

Box 1558, Globe  
Opr: Irving Ross  
MINE, Yuma Co., Au

## COMSTOCK EXT MNG CO

408 N 7th Ave., Phoenix  
Pres: John Evans  
Sec: BT Dick  
DOUGSBY GP MINE, Gila Co.,  
Cu, Zn  
Supt: Tony Trojanovich  
Engr: Henry Nichols  
Idle

## CONSOL TUNGSTEN MINES, INC

Bagdad  
Mgr: JM Cobb  
MINE in Yavapai Co., WO<sub>3</sub>

## COPELEN, W H

Box 107, Wells  
MINE, WO<sub>3</sub>

## COPPER BUTTE MNG CO

Box M, Ray  
Mgr: CP Mitchell  
COPPER BUTTE MINE, 7 mi W of  
Ray, surface, Cu

## COPPER CAP MNG CO

Wickenburg  
MINE, Yavapai Co., Cu  
Idle

## COPPER CITIES MNG CO

Box 100, Miami  
Gen Mgr: RW Hughes  
Mgr: BR Coll  
Gen Supt: JW Still  
Geol: WW Simmons  
Mech Supt: RP Hughes  
Met: CM Curtis  
Elec Eng: Tom J Williams  
MINE, 3 mi N of Miami, open pit,  
Cu

Mine Supt: John Gray  
Prod: 12, 000-ton  
12, 000-TON FLOT MILL, Miami  
Mill Supt: TD Henderson

## COPPER CREEK CONS MNG CO

99 Camino Espanol, Tucson  
Pres: MJ Elting  
VP: James S Douglas  
Gen Supt: LC Yough  
OLD RELIABLE, 12 mi E of Mammoth,  
Cu  
125-TON FLOT MILL

## COPPER CROWN MINE

Kirkland  
Gen Mgr: John L Solomon  
MINE, 30 mi SE of Kirkland, undergr.  
Cu, Au, Ag, V  
Prod: 20 tons

## COPPER HILL MNG CO

Box 991, Globe  
Pres: TB Black, Box 40,  
Flag City, Ohio  
VP: TB Black, Jr  
Purch: LO Goodrich  
SUPERIOR & HORTON MINES, 4 mi  
NE of Globe, undergr., Mn, Cu  
Idle

## COPPER MT MINE

172 S 3rd St., St George, Utah  
Opr: JE Waldfenstein  
MINE, Mohave Co., Cu  
Idle

## CORONADO COPPER &amp; ZINC CO

1206 Pacific Mutual Bldg.,  
Los Angeles 14, Calif  
JOHNSON CAMP MINE, 3 mi  
NW of Dragon  
Mine Mgr: Fred E Gray  
Geol: RE Bergman  
MOORE & REPUBLIC MINES,  
6 mi N of Dragon, undergr., Cu,  
Zn  
200-TON FLOT MILL, Johnson  
Camp  
(See Calif)

## CORONADO MINES, INC

RED MT., BUENA VISTA, GOLDEN  
ROSE & WASHINGTON MINES,  
Box 639, Nogales, undergr., Cu, Mo,  
WO<sub>3</sub>, Pb, Au, Ag, pyrite

## CORONATION MNG CO, INC

Box 387, Bouse  
Pres & Gen Mgr: Charles Milton  
VP: LA Linebaugh  
Sec-Treas: HS Schneider  
CORONATION MINES #1-74, Au,  
Ag, Cu  
Idle

## CRIPPLE CR MNG &amp; MLC CO

Box 247, Cripple Creek  
URANIUM EXPLOR., Navajo Indian  
Reservation  
(See Colo)

## CROWN ASBESTOS MINES, INC

Box 1443, Globe  
Pres: JE Talbot  
VP & Gen Mgr: Fred W Kreider  
Sec: Harry Dittford  
Geol: Arthur N Bull  
MINE, 55 mi NE of Globe, undergr.,  
stripping, asbestos (chrysotile soft)  
Supt: Fred W Kreider

## CROWN PT MNG CO

Box 691, Globe  
Pres & Gen Mgr: CF Moores  
RAY MINE, 35 mi SW of Globe,  
undergr., Pb, Ag  
Engr: RE Douglas  
FLOT GRAV MILL  
(Leased to GR French)

## CYPRUS MINES CORP

1206 Pacific Mutual Bldg.,  
Los Angeles, Calif  
RED CLOUD GP, 8 mi SW of  
Bagdad  
Subleased from ER Dickie  
PIMA MNG CO, Tucson, (holds  
option on prop)  
(See Colo)

## DETROIT MINE GP

Kingman  
Owner: IM George  
Leases: KN Hart & A Skinner  
MINE, Mohave Co., Ag, Cu

## DRAGON ZINC MINE

Owners: Flora C Hubbard,  
1201 St Mary's Rd., Tucson, &  
Mrs WO Swart, 1712 High St.,  
Alameda, Calif  
MINE, Cochise Co., Zn  
Idle  
(Leased to CB Higgins,  
Box 136, Benson)

## DUCOR MNG &amp; MLC CO

Box 13, Prescott  
POLAND MINE, Yavapai Co., Au,  
Ag, Cu, Pb, Zn

## DUNCAN, WALTER MNG CO

Box 1468, Cortes, Colo  
Pres: J Walter Duncan, Jr  
Gen Mgr: Charles R Butler  
CISCO MINE, Lukachukai Mts, Apache  
Co., 93 mi SW of Shiprock, NM, undergr.  
U, V  
Supt: Orval Jahnske  
Prod: 30 tons

## DUTCH FLAT GP

Tucson  
Owner: Birt J Jackson  
MINE, Mohave Co., undergr., WO<sub>3</sub>, Au,  
Pb, Ag  
Under devel

## DYE &amp; BATHRICK

Box 1060, Kingman  
Gen Mgr: RL Dye  
Asst Gen Mgr: JH Bathrick  
BURIANA MINE, Yucca, 18 mi NE of  
Yucca, chamo, WO<sub>3</sub>, Cu, Ag  
Prod: 150 tons  
(Undergr. leased to JA Allen &  
Don R Harper, Kingman)  
COPPER WORLD MINE, Yucca, Ag

## Zn, Cu, Pb

(Leased to Mt States Mng Co)  
150-TON GRAV-FLOT MILL,  
Borisina  
Mill Supt: RL Dye  
Asst Supt & Foreman: CC Strouse

## EAGLE-PICHER CO., THE

MNG & SMELT DIV.,  
WESTERN OPER  
Box 231, Tucson  
VP & Gen Mgr: OA Rockwell  
Mgr: Grover J. Duff  
EAGLE MINE, 29 mi E of  
Tucson, undergr., Pb, Zn, Cu  
580-TON COMBEN  
Idle  
URANIUM EXPLOR., Navajo  
Indian Reservation  
(See Colo, Ill, Kans, Nev, Okla, Utah,  
Wisc)

## EL OSO MINES

Tonto Basin  
Pres: JL Beary  
MINE, WO<sub>3</sub>

## EMPEROR-DUCHESS MINES

CO, INC  
Fairfield, Idaho  
Pres: Ben Lasswell  
VP: Chas Fuller  
Sec-Treas: Roland Baldwin  
Dir: Laurence Green, Sells  
MINE at Sells, Cu, Ag  
Supt: M Green  
Idle

## ENDERS, ARTHUR

Box 362, Globe  
WHITE TAIL ASBESTOS CLAIMS

## EVERETT &amp; RICHARDSON

Duncan  
EUREKA #3 MINE, fluorspar

## FELDSPAR MINE

Kingman  
Mgr: Amos Hodges  
MINE in Mohave Co., Feldspar

## FOLEY BROTHERS

Minneapolis, Minn  
URANIUM EXPLOR., Navajo  
Indian Reservation

## FOSTER, L H

Box 614, Duncan  
EUREKA MINE, fluorspar

## FOUR X MNG CO

c/o Ralph F Smith, Hollen  
Hotel, Lordsburg, New Mex  
BLUE MT MINE, nr Portal, Pb  
Idle

## GENERAL MINES, LTD

Saburra  
MINE, Pima Co., Ag, Cu

## GIACOMA BROS

Box 548, Tombstone  
Mgr: AP Giacomini  
COSTELLO GP, Au

## GIL-TED MNG CO

Agua  
Mgr: VD Standley  
MINE in Maricopa Co., Mn

## GLOBE-MAIMI COPPER

ZINC CORP

814 Heard Bldg., Phoenix  
Pres: John Evans  
Sec-Treas: Russell A Wright  
BENNE DOUGSBY MINES  
Globe  
2 mi N of Globe, undergr., Mn  
Gen Mgr: Russell A Wright  
Geol: Fred Ransome  
Mine Supt: HC Smith

## GLOVE MINE

Mgr: Edward A Mack,  
Box 52, Amado

## GOLD SUGGET MINE

Box 784, Mesa  
Opr: Kenneth W Heber  
MINE, Maricopa Co., Au  
Idle

## GOLDEN CROWN MNG CO

Crown King  
Pres & Gen Mgr: Ralph G Brown  
CODOAR, LYDIA & TIGER MINES,  
undergr., Pb, Zn, Cu, Ag, Au  
Idle  
BROWN GP  
c/o Arthur Still, Box 1513, Prescott  
Au, Ag, Pb, Zn  
Idle

## GOLDEN GATE TRUST &amp; MNG CO

Box 458, Wickenburg  
Pres: NS Oberan  
GOLDEN GATE & FRANKLIN D  
MINES, Yavapai Co., Cu  
Idle

## GOLDFIELD MINES, INC

Mesa  
Owner: Hugh Nichols  
Mgr: TR Russell  
GOLDFIELD MINE, NE of Mesa,  
surface, Au  
Idle  
125-TON CYANIDE MILL  
(Leased to Heber & Landis)

## GOOD ENOUGH MNG &amp; MLNG

450 S 4th Ave., Tucson  
Pres: Don Listerman  
Sec & Purch Agt: J Arthur Zappia  
GOOD ENOUGH MINE, Las Oudjas  
Mng dist, 10 mi N of Arivaca, undergr.  
WO<sub>3</sub>  
Prod: 10 tons  
50-TON GRAV MILL

## GOULD, H W &amp; CO

Box 1622, Prescott  
SHELDON SUPERIOR MINE, 14 mi  
SE of Prescott, Yavapai Co., Cu, Pb,  
Zn, Ag, Au,  
(See Calif)

## GRACE MINES

Portal  
Pres: MT Schlad  
GRACE MINES, undergr., Zn, Pb  
Gen Supt: John L Schlad  
Under devel

## GRAND REEF MINE

Box 8, Yucca  
Owner: AE Knowland  
MINE, 38 mi S of Yucca, undergr.,  
Cu, Pb, V, Au  
Under devel

## GRANNIS, FRANK &amp; PATTERSON, CO

Chloride  
ATWATER KENT GP, Zn, Pb  
Idle

## GRAY FOX TUNGSTEN

c/o EA Mitchell, Congress

## GREEN STREAK MINE

Owner: RL Fleming, Bouse  
Opr: LA Apington  
MINE, Yuma Co., Au, Ag, Cu  
Idle

## GRIFFITH, BEN

Yucca  
McCRACKEN MT GP, 67 mi SE of  
Kingman, undergr., Pb, Ag  
Under devel  
60-TON GRAV FLOT MILL, Signal

## GRISSOM MINES, INC

Box 1, Winkelman  
Pres & Gen Mgr: Hermann C Grissom  
VP: Norman I McLean  
Sec-Treas: EL Grissom  
79 MINE, undergr., Pb, Cu, Zn, Au,  
Ag  
50-TON GRAV-FLOT FLOT MILL,  
under constr at mine  
Mill Supt: Wm H Sexton

## H &amp; N MINING CO

Yucca  
Gen Mgr: Earl Heath  
MARY NEVADA MINE, undergr., Ag,  
Pb, Au  
Foreman: Sheldon Heath  
Idle  
40-YD GRAV OPR  
Supt: Ray Farr

## H &amp; M MINING CO

Crown King  
Partners: CF Moores, FO Holmes  
GLADIATOR MINE, 3 mi N of  
Crown King, undergr., Au, Ag,  
Cu, Pb, Zn  
Foreman: Harrison Smith  
25-TON FLOT MILL  
Idle

## HAGEY, J H &amp; J D

Box 205, Chloride  
J & J CLAIMS, 10 mi E of  
Chloride undergr., Au, Ag, Zn,  
Pb, Cu  
Idle  
D & H GP, 10 mi E of Chloride  
Zn, Pb, Ag, Au, Cu, Mo  
Idle



**HAPPY JEAN OP**

House  
Opr: George Bernardin  
MINR, Yuma Co, Au, Ag, Co  
Idle

**RAYNES, V C**

Box 765, Kingman  
FLUORINANT MINE, WO<sub>2</sub>

**HENDERSON, MRS A S**

Box 27, Patagonia  
MINERAL MINE, 12 mi N of  
Patagonia, undergr, Pb, Zn, Ag,  
Cu  
(Licensed to RG Moreno)  
STAR #1, 87.3 MINER, 12 mi N of  
Patagonia, surface, idle

**HIGGINS, P L**

Box 171, Willcox  
SILVER MINE as Cochise  
Strawberry, undergr, As, Pb,  
Ag, Cd, Zn  
Idle

**HIGH HILL #1-6**

Box 198, Sahuarita  
Opr: CD Wilson  
MINE, Pima Co, Au, Ag, Co, Pb  
Idle

**HILL, FRANK & EDWARDS,  
GEORGE**

Box 84, Ruby Star Rd, Tucson  
DOGTOWN MINE, 22 mi SW of  
Tucson, undergr, Ag, Pb, Zn

**HILLSIDE MNG & MLG CO**

Flagstaff  
Pres: JC Liscroft  
VP & Gen Mgr: Ernest B Dickie  
Asst Gen Mgr: RC Bogart  
Sec: George W Colville  
Mech Engr: GW Guest  
TUNGSTON MINE, 12 mi N of  
Flagstaff, undergr, WO<sub>2</sub>  
MINE Supt: JN Reynolds  
200-TON GRAY MILL, at mine  
Mill Supt: RD Thomson

**HILTON, H P**

Box 188, Tucson  
STATE OF MADRE & LONE MTK  
MINES, undergr, Pb, Ag, Zn, Au  
Idle

**HOLLAND MINES**

Washington Camp  
Mgr: EW McFarland  
MINES in Santa Cruz Co, Pb, Zn, Co

**HOLMESTAKE MNG CO**

Box 308, Waterhaven, Calif  
SONORA GROUP, Yuma Co, Pb, Ag  
(See Calif)

**HOLY CROSS MINE**

1808 Casa Grande Rd, Tucson  
Opr: Tom D Catlin, Oracle  
MINE, Pinal Co, Ag, Cu  
Idle

**HOOPER & CO**

Globe  
Mgr: EL Hooper  
MINE, MILL in Gila Co, limestone

**HOYT, PHILIP S**

Box 2840, Phoenix  
MICA MINE

**HULL MINE, CHIEF OF  
THE DOME, CASTLE DOME,  
DIANA**

Box 1118, Yuma  
Owner: JR Mahood  
MINES, Yuma Co, Ag, Pb

**BUNTLEY INDUSTRIAL MIN,  
INC**

Box 386, Watson, Calif  
Treas: LG Hummel  
HEROLD MICA MINE  
Kingman

**INDIAN SPRINGS MINE**

Box 1085, Globe  
Gen Mgr: RR Scott  
Sec: RB Smith  
Genl: William A Scott  
Purch Agt: RH Scott  
MINE, 14 mi S of Globe,  
undergr, asbestos  
Idle

**INSPIRATION CONSOL  
COPPER CO**

Inspiration  
Gen Mgr: FDR Montgomery  
Asst Gen Mgr: BC Wood  
Asst: CG Brown

**Personnel Dir: LE Caldwell**

Geol: EF Reed  
Mech Engr: AH Neal  
Met: PM Hargrove  
Elec Engr: Mark Smith  
Safety Engr: CO Cunningham  
Asst Purch Agt: EF Dolan  
INSPIRATION MINE, Inspiration,  
undergr, surface, Cu

Prod: 13,000  
Mine Supt: JR Watts  
Asst Supt: BB Whitney  
Open Pit Foreman: TE Wilson  
Undergr Foreman: MR Flais

Engr: CD Huffine

FLOT-MILL, Inspiration

Supt: HF Adams

Foreman: SE McNeil

LEACHING PLANT

Supt: CB Kettering

Gen Foreman: WD Schrader

REFINERY

Supt: CB Kettering

Asst Supt: WD Schrader

(See N Y)

**INTERNATL MIN & CHEM**

CORP, CORSE FELDSPAR

DEPT

Kingman

Supt: JD Howell

OPEN PIT MINE, feldspar, silica

85-TON GRINDING PL

(See Colo, Flor, Mo, Miss,  
New Mex, NC, Ohio, SD, Tenn)

**INTERNATL MNG EXCH**

c/o JD Johnson, Jr

Box 418, Glendale

MYSTERY MINE, Yavapai Co

Idle

GOLDEN ANCHOR GP

Idle

**INTERNATL SMELTING &  
REFINING CO**

Miami

3,000-TON CUSTOM

SMELTER

Supt: Harold Faord

Ore Buyer: Clifton E Smith

(See NY)

**ISBELL CONST CO**

Box 2351, New

SILVER BELL UNIT

Silver Bell

Contract stripping & mgng to

American Smelting & Refining

Co

Supt: John Ward, Jr

(See Calif, Nev, Wash,  
New Mexico)

**JAQUAYS MNG CORP**

1219 S 10th Ave, Phoenix

Pres & Gen Mgr: DW Jaquays

VP: GA Jaquays

Sec: Edythe Jaquays

Asst Gen Mgr: Leroy Wood

Gen Supt: Alvin Gerhardt

REGAL & CANADIAN MINES,

Box 228, Globe, 47 mi N of

Globe, undergr, asbestos

Mine Supt: PH Padgett

Prod: 50 tons

20-TON GRAY MILL

Mill Supt: W Meyers

**JOHNSON MNG CO**

55 N Matlock St, Meen

Mgr: AH Johnson

RARE METALS MOLY MINE &

BLACK COPPER GP, 4 mi W of

Kelvin, undergr, Cu, Au, Ag

**KEESLER, B E**

Phoenix

FELDSPAR MINE

KENNECOTT COPPER CORP

RAY MINES DIV

Ray

Gen Mgr: AP Morris

Asst Gen Mgr: RJ O'Carroll

Div Controller: CL Billing

Purch Agt: BE Guyer

RAY MINES, open pit, Cu, Ag

Prod: 15,000 tons

Gen Mine Supt: JC Van De Water

Asst Supt: PH BC Lansing

Asst Supt: AB Robb

Chief Engr: CL Hoyt

Chief Elec: LJ Miller

Mine Foreman: TR Spargo

Stops Engr: J Burvenberger

Safety Engr: Max Shabe

15,000-TON FLOT MILL, Rayton,  
23 mi SE of Ray

Mill Supt: JL Stevens

Asst Mill Supt: GP Sewell

Mill Foreman: PA Meyer,

**SE Meyer, GL Sharrah**

Met: DV Galbati  
Assay: S Quenda, F Monroy  
Plant Engr: BC Johnson  
Master Mech: PM Hoskins  
Chief Elec: CC Fanning  
(See Nev, New Mex, NY, Utah)

**KERR-MCGEE OIL INDUST**

INC, NAVAJO URANIUM DIV

Box 608, Shiprock, New Mex

COVE MINES, Apache Co, undergr,

UO<sub>2</sub>, V

Mine Supt: Vernon Willden

Undergr prod

URANIUM EXPLOR, Navajo Indian

Reservation

(See New Mex, Okla)

**KNOX-ARIZONA COPPER**

MNG CORP

468 Laurel St, St Louis 12, Mo

COPPER MT PROP

90 N Church St, Tucson

Acting Pres & Gen Mgr: Wm A

Knox, Jr

Vp & Asst Mgr: Nolen L McLean

Geol: Edward Clark, Rolla, Mo

Mech Engr: Albert T Rusk, Ajo

Under devel

**KYLE ASBESTOS MINES**

OF ARIZ

Box 202, Globe

Opr: Roger Q. Kyle

**LEAD & ZINC CORP OF**

AMEX

Box 856, Globe

Pres: Grady B Guldage

VP: JB Williamson

Gen Mgr: Ray Pointer

BEN HUR MINE, 15 mi NW of

Klondyke, undergr, Pb, Zn, Cu, Ag,

Idle

**LEON, MILTON**

208 Wright Bldg, Tulsa 3, Okla

UNCLE SAM MINE, Box 659,

Nogales, 5 mi NE of Nogales,

undergr, Au, Ag, Pb

Under devel

**LAMAS, S J**

2014 E Loreta Dr, Tucson

MINE, WO<sub>2</sub>

**LIVINGSTON TUNGSTEN**

MINE

Opr: Tom Beard, Quartzite

**LONE STAR MINES, INC**

703 10th Ave, Safford

Pres: JP Merrill

VP: Albert Spaulding

Sec: Paul Merrill

LONE STAR MINE, 10 mi NE of

Safford, undergr

Idle

**LUCKY SWEDEN MNG CLAIM**

Box 222, Warren

CLAIM, 6 mi E of Lowell,

Under devel

**LUCKY STAR TUNGSTEN**

MINE

c/o CL Ellsworth & Woodrow

Carpenter, Crown King

**MACCO CORP, BARITE DIV**

1-498 E Paramount Blvd,

Paramount, Calif

Pres: John MacLeod

Div Mgr: John Robinson

Gen Supt: Wm Paine

Purch Agt: Bill Giebler

GRANITE REEF MINE, PO Box 928,

Moena, 20 mi E of Moena, undergr, barite

Mine Supt: Clark Everett

Prod: 150 tons

200-TON FLOT MILL

Mill Supt: Larry Mathis

Assay: Tom Clay

**MAGIC MINE**

Wendin

As

Opr: EJ Johnson, TE Warren

**MAGMA COPPER CO**

Box 27, Superior

Pres & Gen Mgr: WP Goss

Asst: PU Sarver

Asst Gen Mgr: Darrell Gardner

VP & Sec: Ray Bonebrake

Treas: WF Schmidt

Met: AA Wallace

Geol: Hugh Steele

Mech Engr: Howard Johnston

Elec Engr: TP Trush

Purch Agt: RL Modlock

Auditor: WJ Swanson

**MAGMA MINE, N of Superior,**

undergr, Cu, Ag, Au

Prod: 1,500 tons

Mine Supt: CB Forscher

Asst Mine Supt: John Dragow

Mine Foreman: Cecil Tombaria

Mine Engr: B Van Voorhis

1,500-TON FLOT MILL, Superior

Mill Supt: BJ Rex

Mill Foreman: John Fry

Assay: WW Simon

REVERB SMELTER, Superior

Supt: EJ Caldwell

Asst Supt: Claude Soule

**MAGMA KING MANGANESE**

MINE

Superior

MINE in Pinal Co, Mo, Ag

Mgr: Ralph Pomeroy

**MANGANESE KING MNG SYN**

Box 351, Bouse

Pres: RN Doyle

VP & Sec: Harrison Doyle

Gen Mgr: LA Aplington

MANGANESE KING MINE, 20 mi NE

of Bouse, surface

**MANHATTAN CONSOL MINES**

DEV CO

Box 351, Tonopah, Nevada

Pres: J Fred McColloch

Sec: Nick J Barbach

SCRIBNER MINE, Box 101,

Elfrido, 25 mi NW of Elfrido,

undergr, Pb, Ag, Au

Mine Supt: John W Purstey

OLD DICK MINE, Bagdad, 2 mi S of

Bagdad, undergr, As, Cu, Ag, Pb

Mine Supt: KL Erickson

Mine Foreman: Pat E Sayre

(See Nevada)



## Arizona

Mine Supt: BG Williams  
Asst Supt: WF Sloan  
13,000-TON FLOT MILL  
Mtn Supt: JW Smith  
Assay: GR Warren  
(See NY)

MIDNIGHT & MIDNIGHT  
EXT #1 MINES

Box 1032, Nogales  
Owners: Val & Margaret Cason  
MINES, Santa Cruz Co, Ag, Pb  
Idle

## MINERAL MT M &amp; M CO

350 E 14th St, Tempe  
Pres: CM Miller  
VP & Gen Mgr: LL Boyer  
GORHAM-HALL GP, 20 mi SW of  
Superior, Pb, Ag, Zn, undergr  
dev  
WOODPECKER MINE, Pinal Co.,  
Au, Ag, Pb, Under devel  
SILVER QUEEN GP, 23 mi SW of  
Superior, Pb, Ag  
Idle

## MONICA GROUP

Box 27, Yarnell  
Owners: CD Howe, John L Riggins,  
LJ Jaycox  
MINE, Yavapai Co, Au

## MONITOR GP

Lessee: GR French  
Mgr: Chas F Moore, Box 891,  
Globe  
MINE, Pinal Co, Au, Ag,  
Cu, Pb

## MORNING STAR # 1-4

215 Pleasant St, Prescott  
Owner: Charles L Fellipt  
PROSPECT, #s 1 & 5 of Prescott  
Idle

## MT STATES METALS CO

Yucca  
Pres & Gen Mgr: GA Freeman  
COPPER WORLD MINE, 15 mi NE  
of Yucca, undergr, Cu, Zn  
COPPER WORLD MILL

## NASH MINES

408 Nash Bldg, Austin, Tex  
Owner: Jas P Nash  
BONANZA, HOLLAND, KANSAS,  
ESTELLA, BEIMONT, MAINE,  
NEW YORK, INDIANA, DUQUESNE, &  
EMPIRE MINES, Patagonia Mng dist  
Gen Mgr: DC Gilbert

NEW LONDON, STORM  
CLOUD, ORIG AND BENTON M

MINEs  
c/o Clayton Straub, 1075  
Subway Term Bldg,  
Los Angeles 13, Calif  
Lessee: KN Hart, HM Hansen &  
Adrian Skinner  
MINE, Mohave Co, Ag, Pb, Zn  
Idle

## OLD DOMINION GREY GP

Box 100, Miami  
Owner: Miami Copper Co  
MINE, Gila Co, Cu  
Idle

## ORO BLAWCO MINES

Box 66, Ruby Star Rt, Tucson  
Gen Mgr: TJ Anderson  
ORO BLANCO MINE, 75 mi S of  
Tucson, undergr, Au, Ag  
30-TON GRAV MILL, Santa  
Cruz Co  
Idle

## ORO FINO MINES, INC

Box 781, Prescott  
Pres & Gen Mgr: CW Gabrielson  
VP & Sec: Howell Newton  
ORO FINO MINES or Widdell, placer  
Au  
Under devel

## ORO FLAME MNG CO

235 N Pleasant St, Prescott  
Mgr: HK Green  
ORO FLAME & ORO MINES,  
Yavapai Co, undergr, Au, Ag, Pb  
Idle

## ORR &amp; DICKIE

Box 1, Box 360, Prescott  
Partners: Jack Orr & ER Dickie  
CASH MINE, 15 mi S of Prescott  
Au, Ag, Cu, Pb, Zn  
Idle

## SENATOR GP, Yavapai Co, Ag, Cu

(Leased from Phelps Dodge Corp)  
Idle

## OSBORNE, HARRY M

Box 1017, Parker  
SUE MINE, undergr, Au, Cu  
7-TON MILL

## PARKER &amp; RAYMOND CO

310 N Alarcon St, Prescott  
Pres: FD Parker  
VP: John W Raymond  
LYNX CR MINE, placer, Au, Ag  
Under devel

## PAUL LIME PLANT

Paul Spur  
Pres & Gen Mgr: Alfred Paul, Jr  
Asst Mgr: Robert Smith  
MINE, open pit, lime rock  
Gen Supt: Tom Blahop  
Prod: 500 tons  
LIME KILNS, rotary kilns, crushing  
& grinding and screening plant

## PERLITE INDUS OF ARIZONA

2123 E Henshaw Rd, Phoenix  
PERLITE MINE

PHELPS DODGE CORP  
WESTERN OPERATIONS

Douglas  
WESTERN GEN OFFICES  
VP, Western Oper: CR Kurell  
Gen Mgr Western Oper: WC Lawson  
Asst Gen Mgr: JB Pollen  
Office Mgr: HE Moore  
Dir, Labor Rel: WJ Uren  
Asst Chief Eng: JH Davis  
Geophys Research: EE Malliot  
Gen Aud: John Kuhn  
Asst Gen Purch Agt: KA Ables  
West Traffic Agt: AC Bacon  
MORENCI BR,  
Mines, concentrator & smelter  
Mgr: LM Barker  
Gen Supt: WK Pount  
NEW CORNELIA BR,  
Ajo  
Mines, concentrator & smelter  
Mgr: AT Barr  
COPPER QUEEN BR  
Bisbee  
Mines, concentrator  
Mgr: CE Mills  
Supt: WP Crawford  
DOUGLAS REDUC WKS  
Douglas  
Smelter  
Mgr: CE Mills  
Supt: MG Fowler  
PHELPS DODGE MERC CO, stores  
at Bisbee, Clifton, Douglas,  
Mazenc  
Mgr: RW Hagan, Douglas  
NEW CORNELIA COOP MERC CO  
Ajo  
Mgr: RW Hagan, Douglas  
(See New Mex, Tex, NY)

## PHILLIPS ASBESTOS MINE

Globe  
Mgr: Guy Phillips  
MINE in Gila Co, asbestos

## PIMA MNG CO

Box 7107, Tucson  
Pres: AC Rubel  
VP & Gen Mgr: ED Spaulding  
Sec: RF Nixon  
Purch Agt: DR Tromper  
Gen Supt: RE Thurmond  
PIMA MINE, 30 mi SW of Tucson,  
Cu  
Mine Supt: RE Thurmond  
Foreman: DD Turberville  
Under devel  
(Under option to Cyprus Mines  
Corp)

## PIMA ROCK &amp; SAND

Ajo Way, Tucson  
Pres: ED Lieberman  
Eng: Louis Green  
LOUDON MINE, 14 mi E of  
Sahuarita, edit, Cu  
Idle

## PIMA ROCK &amp; SAND

Elgin MINE, Cu  
Idle

## PINAL &amp; ASTEX

c/o Joseph E Valentino,  
Box 1482, Miami  
Opr: Valentino & Bustamante  
MINE, Gila Co, Ag, Pb, Zn  
Idle

## PINE TOP ASBESTOS MINES

Box 1985, Globe  
Owner: Grady B Gollidge  
PINE TOP ASBESTOS MINE,  
40 mi NE of Globe, undergr,  
asbestos  
Mine Supt: JB Williamson

## POE, LYLE C

Douglas  
SOLDIER'S FAREWELL MINE  
Fluorspar

## PRUDENTIAL MINES

Yuma Co  
Cons Engr: Charles Milton,  
1548 F St, San Diego, Calif  
(See Calif)

## QUEEN MNG CO

Rodeo, New Mex  
HILLTOP MINE, Cochise Co,  
Ag, Cu, Pb

RARE METALS CORP OF  
AMERICA

Beasott Tower, El Paso, Tex  
URANIUM EXPLOR, Navajo Indian  
Reservation  
(See Utah)

## RAY LEAD SILVER MINE

Globe  
Mgr: Charles Moore  
MINE in Pinal Co, Pb, Ag

## RED CLOUD GP

Owners: ML Lynch, John W  
Lauvier, Prescott  
Lessee: ER Dickie, Bagdad  
MINE, 8 mi SW of Bagdad,  
diamond drill explor  
(Sub-leased to Cyprus Mines  
Corp)

## REED &amp; REED

Rt 1, Box 123, Bishop, Calif  
Gen Mgr: George F Reed  
BANNER & POUNTAINHEAD MINE  
14 mi N of Kingman, undergr,  
Zn, Ag, Au, Pb, Cu  
Idle

## REORG SILVER KING

DIVIDE MNG CO

Prescott  
MT UNION MINE, 10 mi S of  
Prescott, undergr, Au, Ag, Pb, Zn  
Idle

## REYMERT EXT SILVER

MINES  
Box 321, Superior  
Pres & Gen Mgr: Norman De Vaux  
VP: Ray M Mattinger  
Sec: Neil B McGinnis  
Gen Supt: Fred A Bennett  
REYMERT MINE, 7 mi W of  
Superior  
Explor Drilling

## REYNOLDS FALLS

ASBESTOS CO  
Box 1593, Globe  
Partners: George & Charles Kohl  
MINE, 55 mi N of Globe, undergr  
chrysotile, asbestos

## RIO DEL MONTE MINES,

INC  
Salome  
Pres & Gen Mgr: O K Gilliam  
VP: Emil Anderson  
Sec: E V Eckel  
RIO DEL MONTE MINE, 4 mi SW  
of Salome, undergr, Au, Ag, Cu,  
Zn  
Under devel  
GRAY MILL

## RIVIERA MNG CO

Phoenix  
CHRISTMAS MINE, 9 mi N of  
Winkelman, undergr, Cu  
Prod: 50 tons

## ROBLES, JOE

Box 134, Tombstone  
LITTLE FANNY MINE, WO<sub>2</sub>  
Under devel

## SAN ANTONIO MINE

Box 321, Rowood  
Owner: Richard Ballesteros

## SAN MANUEL COPPER

CORP  
Box 4, San Manuel  
Pres: W F Goss  
Plant Mgr: F H Buchella  
VP & Sec: R C Bonebrake  
Treas: W F Schmid  
Purch Agt: J A Gardner  
SAN MANUEL MINE, undergr, Cu,  
Mo, Au, Ag  
Mine Mgr: J F Buchanan  
Devel Supt: C L Pillar  
Geol: H J Steele  
Mech Eng: C A Bilson  
Ch Mng Eng: L I Van Dalsen  
Elec Eng: R P Diehl

## Mine Foreman: H I Ashby

30,000-TON FLOT MILL  
under constr  
140,000,000 LBS REVEREH SMELT  
under constr

## SAN RAMON MINE

4834 E Broadway, Tucson  
Owner: Bob Cruise  
MINE, 10 mi NW of Patagonia,  
undergr, Pb, Cu, Ag, Zn

## SANDERS MINE

Sundev  
Mgr: C A McCarrell  
MINE in Apache Co, bentonite

## SANTA TERESA MNG CO

Barford  
Sec: Paul Merrill  
SANTA TERESA & FAIRVIEW  
MINES, Graham Co, Pb  
Idle

## SCHEELY MNG CO

Arivaca  
Pres: L G Ferstrom  
Sec: Fred Carlson  
SCHEELY GP, 23 mi SW of  
Arivaca, undergr, WO<sub>2</sub>  
Mine Supt: L G Ferstrom  
Foreman: Fred Carlson  
30-TON GRAV MILL

## E A SCHOLZ &amp;

J H CAZIER  
Bagdad  
COPPER KING MINE, 7 mi S  
of Bagdad, undergr, Zn, Cu  
Under devel

## SEIN FEIN MNG CO

Klondyke  
Pres: Dean Nicholson  
MINE, Aravipa dist, undergr,  
surface, Au, Ag, Cu, Pb  
Supt: Raymond Pointer  
Engr: E H Lundquist

## SHANNON MNG CO

Box 301, Tombstone  
Owners: A J Hutchinson &

## SHATTUCK DENN MNG CORP

120 Broadway, New York 5, N.Y.  
Pres: Thomas Barton  
VP: S S Shattuck  
Sec: Norman LaMond  
IRON KING BR  
Humboldt  
MINE, undergr, Zn, Pb, Au, Ag  
Gen Mgr: H F Mills  
Gen Supt: A J Zinkl  
Geol: L Bombardieri  
Mech Eng: Joe Kachnic  
Elec Eng: Bert Ady  
Mine Eng: Bob Waples  
Prod: 200 tons  
900-TON FLOT MILL at mine  
Mill Supt: Albert Pesita  
Asst Mill Supt: Dale Barnard  
Assay: W Stalter  
Mine Supt: Elmer Tomkinson  
(See Colorado, New Mexico, N.Y.)

## SHOEMAKE, JOHN &amp; CARL

Box 124, Prescott  
GOLD COIN GP, Yavapai

## SIERRA ANCHA MNG CO

Globe  
URANIUM CLAIMS, Gila Co  
(See Calif)

## SIERRITA MNG &amp;

RANCHING CO

Box 25, Ruby Star Rt,  
Tucson

Treas: Leander M Harris  
GOLDEN FLEECE MINE,  
Pima Co, Au

Under devel

COWBOY MINE, Pima Co,  
Pb, Ag, Zn

Under devel

OLD POWERS MINE, Pima Co,  
Cu

**SILVER QUEEN MNG CO**  
124 N 2nd Ave, Phoenix  
Sec-Treas: Floyd A Rains  
**SILVER QUEEN #1-4 MINES**,  
Yavapai Co, Ag  
Idle

**SILVER REEF MINE**  
Box 492, Casa Grande  
MINE, 13 mi S of Casa Grande,  
undergr, open pit, Ag  
Idle  
(Leased to W L Clayton)

**SNYDER MNG & MLO CO**  
Box 44, Sonoma  
Mgr: Phil Snyder  
Sec: Mrs. Phil Snyder  
CONGLOMERATE, AURUM,  
EAGLE, & W A, REESE  
#1, 2, 3, MINES Pima Co, Pb  
Idle

**SOMIND MNG & MLO  
CORP**  
Salome  
Pres & Gen Mgr: H T Zover  
MARQUANSLA & EAGLE  
MINES

**SORENSEN ASBESTOS  
CORP**  
Box 1435, Globe  
SALT RIVER GP

**SOUTHERN CROSS MNG  
CORP**  
Box 47, Quartzville  
Mgr: L A Appleton  
LUCKY LEAD #1-4, 10 mi S  
of House, undergr, Pb, Zn,  
Ag, Au  
Idle

**SOUTHWEST MINES CONTR  
CO**  
Box 161, Prescott  
Gen Mgr: Joe Ward  
GREAT SCOT MINE, 18 mi NE  
of Prescott, undergr, Pb, Zn  
Au, Ag

**SOUTHWESTERN MINES**  
Douglas  
MINE, WO<sub>3</sub>

**SPAR MNG CO**  
Fl, Thomas  
Supt: C B Rhodes  
FLUORINAR MINE

**SPARKES, GRACE M**  
Star Rt, Nevada  
Mgr: Perry L Bonen  
STATE OF TEXAS MINE, Star  
Rt, Nevada, 34 mi W of  
Rice, undergr, Zn, Pb, Ag,  
Au

**STANDARD TUNGSTEN CORP**  
Pomona

**STARLIGHT MINE O F**  
Conners: Edward & Blanche  
Bartlett  
Lease: B Wolfe, Box 2159, Globe  
MINE, Graham Co, Ag, Pb  
Idle

**STETTER, J J**  
Box 27, Quartzville  
TUNGSTEN, WO<sub>3</sub>

**STEVENS MINE**  
Box 715, Clifton  
Mgr: C E Stevens  
Gen Supt: Jesse Gomer  
MINE, 9 mi N of Clifton,  
undergr, Cu  
Prod: 35 tons  
Mine Supt: C E Stevens  
Asst Supt: Jesse Gomer  
Foreman: M Gomer  
Mine Regr: R L Nusselt

**STRONG & HARRIS, INC**  
c/o John P Herndon,  
Vanadium, New Mex  
SUNNYDE MINE, Santa Cruz  
Co, Ag, Cu, Pb

**SULPHUR CORP OF  
AMERICA**  
1440 E Town & Country  
Lane, Phoenix  
Pres & Gen Mgr: C Stanley,  
JV  
(See Calif)

**SUMMIT COPPER MINES,  
INC**  
Box 118, Payson

Pres & Gen Mgr: R W Thompson  
VP: Dr A L Gogner  
Sec: Hon. M Thompson  
SUMMIT MINE, 6 mi SW of  
Payson, undergr, Cu, Au  
50-TON GRAY MILL  
Idle

**SUN-GOLD MNG CO**  
711 Valley Nat'l Bldg, Tucson  
Treas: John C Gungil  
SUN-GOLD MINE, Pima Co,  
undergr, Au  
Mgr: Alfred E Turner  
Idle

**M M SUNDT CONST CO**  
Owner: J Bouldin Estate,  
Box 2382, Tucson  
VP: G E Kananen  
DOUBLE EAGLE MINE  
Patagonia

**SUNSET MNG CO**  
213 Minna St, San  
Francisco, Calif  
Pres: J L Baisachi  
VP: W O Kay  
Sec: Charles Greenberg  
MINE, Pinal Co, Ag, Cu  
Under devel

**SUTTON-DRYSDALE CORP**  
Box 35, Wilcox  
Pres & Gen Mgr: Wayne Sutton  
SUTTON MINE, 18 mi SW of  
Bowie, undergr, Au, Cu, Pb  
Idle

**SWISHELM MINE**  
Box 693, Tombstone  
Lease: William Ward  
MINE, 50 mi NE of Tombstone,  
undergr, Au, Ag, Pb  
Idle

**TEJON MINE LSG & DEV  
CO**  
Box 465, Tombstone  
Lease: William Ward  
TEJON MINE, 18 mi NE of  
Tombstone, undergr, Cu, Au, Ag  
Under devel

**THREE MUSKETEERS  
TUNGSTEN MINE**  
c/o A R Viorces  
208 LaSalle St, Chicago, Ill

**THREE R MINE**  
Patagonia  
Oper: Leon & Wilson  
MINE, Santa Cruz Co, Ag, Cu, Pb

**TIAJUANA MINES, INC**  
2200 W Van Buren, Phoenix  
Pres & Gen Mgr: C T Tucker  
VP: Harold N Rainfield  
Sec: R W Rainfield  
Gen Supt & Geol: Joseph G O'Brien  
Purch Agt: Ch T Tucker  
TIAJUANA & HERR GPS, 1 made,  
Santa Cruz Co, undergr, Pb, Zn,  
Ag, Cu  
Idle

**TOMBSTONE DEV CO**  
Tucson  
TOMBSTONE GROUP, Ag, Pb  
Supt: Brooks Davis

**TORNADO MNG CO**  
Box 1066, Miami  
Mgr: Wm Humphrey, Globe  
LONGHORN ARIZ MINE, Banner  
dist, Zn, Ag, Pb  
Idle  
TORNADO MINE, near Winkelman,  
Pb, Zn  
Idle

**TURKEY CR PLACER**  
Claxton  
Oper: Thomas R Cleator  
MINE, Yavapai Co, Ag  
Idle

**UNITED MINERALS CORP**  
516 Pitt Bldg, Salt Lake City,  
Utah  
Gen Mgr: C W Snyder, Jr  
Geol: M C Goshie III  
SANTA CRUZ MINE, Patagonia,  
Banner mag dist, NE of Nogales,  
undergr, Cu  
Idle  
(See Utah, Nev, Ida)

**UNITED MINES CO**  
Chloride  
Pres: M B Maxwell  
VP: Dr J O Irish

Sec-Treas: C L Lind  
EVANOM, LITTLE TERN, &  
SCOTCH LASSIE GPS, Au, Ag, Zn  
Under devel

**SUN-GOLD MNG CO**  
711 Valley Nat'l Bldg,  
Tucson  
Treas: John C Gungil  
SUN-GOLD MINE, Pima Co,  
undergr, Au  
Mgr: Alfred E Turner  
Idle

**U S LIME PRODUCTS CORP**  
GRAND CANYON LIME &  
CEMENT CO DIV  
175 S Alvarado St, Los Angeles,  
Calif  
NELSON PLANT, open quarry,  
vert kiln  
Supt: Ray Lauer  
(See Calif, Nev)

**UNITED STATES SMELTING  
REFINING & MNG CO**  
75 Federal St, Boston, Mass  
GOLD MINE, Mohave Co,  
Uranium Explor, Navajo Indian  
Reservation  
Idle  
(See Alaska, Mass, New Mex, Utah)

**U S TUNGSTEN CORP**  
Box 500, Congress  
Pres: J P Zamaras  
VP: Charles P Lower  
Sec: John P Robinson, Jr  
ZANARAPOLIS MINE, 30 mi NW  
of Congress, undergr, Surface,  
skunktail  
Under devel  
Mine Foreman: L M Rutledge  
250-TON GRAY-FLYOT MILL  
Mill Foreman: Jess Parrie

**UPSHOT MINES, INC**  
Box 181, Prescott  
Pres: Omar D Smith  
VP: D H Wachtel  
Sec-Treas: C E Ekroth  
UPSHOT MINE, Yavapai Co,  
undergr, Ag, Cu, Pb  
Idle

**URAINBOW, INC**  
608 Kearns Bldg, Salt Lake City,  
Utah

Pres: Henry B Squires  
VP: Robert W Shields  
Sec-Treas: Val S Scoville  
BACK'S CANYON MINE  
Fredonia, undergr, UOg, Cu  
Undergr production  
Mine Supt: Leo Scoville

**VANADIUM CORP  
OF AMERICA**  
Durango, Colo  
MONUMENT #2 MINE, Navajo  
Indian Reservation, undergr, open  
pit, UOg, V  
Undergr and open pit prod  
(See Colo, NY, Utah)

**VANADIUM INVEST CO**  
Box 1005, Globe  
Mgr: R Scott  
61 GROUP, Pinal Co, Pb, Ag  
Idle

**VASSER, C F & BILL**  
Box 312, Salome  
JACK POT #1, WO<sub>3</sub>

**WESTERN CHEM CO**  
625 S 5th St, Phoenix  
CHRYSLITE MINE

**WESTLAKE, BRICE H**  
Box 181, Globe  
WESTLAKE TUNGSTEN MINE, 12 mi  
SW of Globe, undergr, WO<sub>3</sub>, Ag, Cu,  
Mn, Au  
GRAY MILL

**WHITE MT MNG & MLO CO**  
Grants  
Supt: David P McConnell

**WILKINSON, J L & CO**  
Crown King  
Mgr: Ed W Carls  
MINE in Yavapai Co, Au, Ag  
Under devel

**WILKINS MINE O P**  
Box 14, Patagonia  
Owner: Bond Nat Trust  
Lease: Thomas Headley  
MINE, Santa Cruz Co, Ag, Pb  
Idle

**WOTHERE MINES**  
Box 47, Kingman  
Gen Mgr: Geo B Blonsky  
WILLIAMS TUNGSTEN MINE

**WREN, HOWARD E**  
Kingman  
MIDWAY TUNGSTEN MINE

**YUCCA MNG & MLO CO**  
Box 67, Yucca  
Pres & Gen Mgr: R J Dalton  
VP: Ford Wolf  
Sec: Ben P Williams  
ANTLER MINE, 11 mi E of Yucca,  
undergr, Cu, Zn, Ag, Au  
Prod: 150 tons  
150-TON FLOT MILL  
Idle

## ARKANSAS

**AMER CYANAMID CO**  
Box 726, Little Rock  
MINE, 4 mi S of Little Rock,  
surface, bauxite  
Mine Mgr: R H Harris  
(See Fla, NY)

**ARKANSAS GYPSUM CO**  
Marbleboro  
Pres & Gen Mgr: Vernon S Lewis  
GYPSUM MINE, Marbleboro  
undergr, surface  
(See Kan)

**ARK LIMESTONE CO**  
Cushman  
MINE, Independence Co, Mn

**CONSOL CHEM IND, INC**  
Box 98, Arch St, Sub-station,  
Little Rock  
MINE, 6 mi S of Little Rock  
Supt: E J Creider  
Asst Supt: Kenneth Guerra  
Under devel  
105-TON MILL  
(See Tex)

**NATL LEAD CO, BAROID  
SALES DIV MAGNET COVE  
OPER**

Malvern  
MINE, 12 mi W of Malvern,  
surface, Ba  
Supt: E C Farrel  
Asst Supt: W A Halbert  
1500-TON FLOT MILL  
(See Calif, Kans, Mo, Nev,  
S Dak & Tex)

**POROCCEL CORP**  
210 Washington St,  
Philadelphia 5, Pa  
MILL, Pilefield Co, bauxite  
(See Pa)

**REYNOLDS MNG CORP**  
Boyle Bldg, Little Rock  
Pres: Walter L Rice  
Purch Agt: J W Glover  
MINE  
Bauxite  
Gen Mgr & VP: R H Zeglin  
Ch Geol: J H Moore  
(See Colo, Va)

**WESTMORLAND MN CORP**  
Box 44, Batesville  
Pres & Gen Mgr: D E Sellers  
MINE, 6 mi N of Cushman, surface  
Mn  
Idle

## CALIFORNIA

**ABACA MNG CO**  
Box 293, Inyokern  
Pres: M M Ford  
BIG SUGAR TUNGSTEN MINE,  
undergr, surface, WO<sub>3</sub>

**ADAMS, HARRY**  
1408 Waterman St, San  
Bernardino  
ADAMS TALC MINE, San  
Bernardino, talc  
Idle

**AAJAX TUNGSTEN CORP**  
137 S Main St, Bishop

Pres: J R Edwards  
VP: Joe E Snelson  
Sec: Bruce R Thompson  
Mgr: C H Hall  
TUNGSTAR, HANGING VALLEY,  
FERNANDO-DURHAM MINES,  
undergr, WO<sub>3</sub>  
Gen Supt: J E Keola  
Mine Supt: Geo L Hall  
Geol: Dudley Davis, Darwin  
Mine Foreman: Joe Rom  
Prod: 100 tons  
100-TON GRAY MILL, Bishop  
Mill Supt: Day Johnson  
Mill Foreman: Elmer Lovelace

**ALASKA MINE**  
685 6th St, San Francisco  
MINE, Pike, Au  
Mgr: R J Kohlen  
20-TON STAMP MILL, Pike  
Idia  
(Leased to F Gilman Low, Pike)

**ALBERTOLI, MORRIS**  
P O Box 655, Big Pine  
ROPE (BLACK CANYON)  
GP LOPE, White Mts dist, Au,  
Ag, Ca, Pb, Zn  
Idia

**ALCAN MNG CO**  
5281 Stockton Blvd, Sacramento  
COFFEE CR DREDGE, Trinity Riv  
dist, placer  
Idia

**ALEXANDER, VERN B**  
Ft Jones  
RATTLESNAKE LOPE, Klamath Riv  
dist, Au, Ag

**ALHAMBRA GOLD MINE  
CORP**  
1903 Outpost Dr, Hollywood;  
119 Friedman Bldg, Los Vegas,  
Nev  
Pres: O H Griggs  
VP: Lloyd Meyer  
Sec: C E Weaver  
Treas: C D Griggs  
Mine Supt: Fred Pearney  
ALHAMBRA MINE, 11 mi NE of  
Placerville, undergr, Au  
SUNNYSIDE MINE, Sierra Co, placer  
Au  
FOX MINE, Plumas Co, undergr, Au

**ALMADEN BUMPS**  
Almaden  
MINE, Santa Clara Co, Hg

**ALPINE MINING CO**  
c/o Clyde Sherwood, 703 Market  
St, San Francisco  
ALPINE MINE, Hope Valley, 20 mi  
W of Woodlands, undergr, WO<sub>3</sub>  
Idia

**ALTA MINING CO, INC**  
Box 368, Crescent City  
Pres & Gen Mgr: John Roca  
VP: Joe M Poiray  
Sec: Ralph E Yoder  
Gen Supt: John Noca  
ALTA MINE, Low Divide, Del  
Norte Co, 8 mi E of Smith Riv,  
undergr, Cu  
Idia

**ALTA COPPER CO, INC**  
Box 368, Crescent  
Pres & Gen Mgr: Joe Reinart  
Sec: Ralph E Yoder  
Genl: Roger Beale  
ALTA COPPER MINE,  
8 mi E of Smith Riv, Del  
Norte Co, undergr, Cu  
Under devel

**AMERICAN ASBESTOS  
MNG CORP**  
11 W 42nd St, New York  
MINE, Calaveras Co, asbestos  
Idia

**AMERICAN CHROME CO**  
1 Montgomery St, San  
Francisco  
Pres: Henry A Julian  
(See Winston)

**AMERICAN MINERAL CO**  
940 S Mission Rd, Los  
Angeles 23  
Pres: A H Shaker  
VP & Gen Mgr: W A Morie  
WHITE ROCK MINE, 12 mi NW  
of Cambl, surf, ceramic clay  
Prod: 400 tons per mo  
Mine Supt: E E Edgmont  
100-TON MILL, Los Angeles,

commercial grinding  
CLAY PIT, Kern Co

**AMERICAN POTASH &  
CHEM CORP**  
3030 W 6th St, Los Angeles  
84

Pres: Peter Colefax  
VP: W J Murphy  
Treas: L A Adams  
Purch Agt: L B Cornelius  
MINE, Lake Brines, potash,  
borax, soda salts, Br, Li  
Prod: 650,000 tons yearly

**AMERICAN SMELTING &  
REFINING CO**  
405 Montgomery St,  
San Francisco  
MINING DEPT  
Res Geol: L K Wilson  
Asst: M M Brooks  
BLAST FURNACE, Selby, lead  
Mgr: W S Reid  
Gen Supt: H P Wagner  
Purch Agt: J M Hanna  
Smelter Supt: F C Moran  
Refin Supt: B K Shedd  
Hast Mach: W H Holmes  
(See Aris, Colo, Ida, Kans,  
Mo, Mont, Neb, New Mex,  
NY, Okla, Tex, Utah, Wash)

**AMO PLACER MINE, INC**  
Box 420, Oroville  
Pres: F C Peterson  
MINE, 1 1/2 mi E of Oroville,  
undergr, Au  
MILL

**ANACONDA COPPER  
MNG CO**  
WESTERN OPERATIONS  
DARWIN MINER, Pb, Zn, Ag  
Mgr: F E Tong  
Mine Supt: Mack M Tilley  
Foreman: J C Kinneberg  
Geol: John T Eastlink  
Met: W B Davis, Jr  
FLOT MILL, Darwin  
Supt: E C Peterson  
Asst Supt: J H Teal  
Assayr: Louis Warburton, Jr  
LEVIATHAN SULPHUR MINE  
(See Ida, Nev, Mont, New Mex,  
Utah, NY)

**ANDERSON ROCK PLANT**  
Box 1372, Fresno  
MINE, Fresno Co, placer, Au

**ANCHO ERIE MNG CO**  
401 2nd St, San Francisco  
Gen Mgr: Bert C Austin  
MINE, Wash dist, Nev Co,  
undergr, Au  
Supt: S J Odgers  
250-TON CYANIDE FLOT MILL  
Supt: Ira D Billich

**ANCHER MINING CO**  
310 S Spring St, Los  
Angeles 13  
Pres: B C Acoos  
VP: F B Belcher  
Gen Mgr & Pur Agt: R D Prior  
ANCHER MINE, Conings, Hg  
Supt: Gene Hermann  
Engr: V Arcisrigo  
Idia

**ARGENTA CONS MNG CO**  
257 S Spring St, Los Angeles 12  
Pres: Harry Lee Martin  
VP & Sec: Edwin C Morrill  
(See Nevada)

**ARGO, ROY**  
1137 S Loma Dr, Whittier  
LILLY # 1, 2, 3, State Range  
dist, Au, Ag, Pb, Cu, Mn  
Idia

**ASELTINE, E P**  
Box 296, Darwin  
LEARY LOPE, Cerro Gordon  
(Swansea) dist, Zn, Pb, Ag, Cu  
Idia

**ASHLAND MNG CO**  
423 "J" St, Crescent City  
MINES, Del Norte Co, Cr

**ATKINSON, E B**  
P O Box 151, Johannesburg  
MINE SPOT, Randburg dist,  
placer, Au, Ig  
YELLOW ASTER LEASE, Au, Ag

**BACKELS, ANDREW & PAUL**  
80 Pierce St, San Francisco 17  
EMPIRE-LONE STAR GP, 12 mi  
NE of Downsville, undergr, Au  
MEXICAN MINE, 3 mi E of  
Goodyear's Bar, Au  
Idia

**BADE, WILLIAM J**  
4114 Sherman Way, Sacramento  
LEE MINE, Rocklin (Loomis)  
dist, placer, Au, Ag

**BAKER, FRANK**  
Route 1, Barstow  
HARD LUCK GP LOPE, Solo dist,  
San Bernardino Co, Pb, Ag, Cu, Au

**BANNER HILL URANIUM CO,  
INC**  
Box 1089, Tonopah, Nev  
WILD CAT CR, Banner Hill, Mono  
Co, undergr, U<sub>3</sub>O<sub>8</sub>, Cu, Ag, Au  
Under devel  
Mine Supt: Raymond C Harvey  
(See Nev)

**DARIUM PROD, LTD**  
SAVERCOOL MINE, Plumas Co,  
barite

**ALMADOR MINE**  
Greenville  
Mgr: J B Perry  
Supt: H J Tiltia  
Engr: R F Love  
Mill Foreman: T J Cayot  
(See Barium Products, Nevada;  
Intermountain Chem, Wyo;  
Food Mach & Chem, NY)

**BARLOW LANE MINE  
& MFG CO**  
Box 132, Bishop  
Own & Oper: Ray Harvey  
MINE, undergr, WO<sub>3</sub>  
GRAV MILL, Bishop

**BASSLEY, FREDERICK**  
Box 443, Yreka  
CHERRY HILL MINE, Scott  
Riv dist

**BAUD B MNG & MFG CO**  
Box 1162, Trona  
Gen Mgr: J H Bennett  
Asst Gen Mgr: George A Smith  
SKIDOO MINE, 60 mi N of  
Trona, undergr, Au, Ag, WO<sub>3</sub>  
Under devel  
40-TON FLOT-GRAV-CYAN-AMAL  
MILL, Emigrant canyon  
Mine & Mill Supt: J H Bennett  
Asst Mine & Mill Supt: Geo A Smith

**BECK, MARTIN**  
Box 343, Mohave  
GUNTREE MINE, Kern Co,  
WO<sub>3</sub>, Sb  
Idia

**BEDELL, STUART**  
Big Pine  
WAUCALIA MINE, Inyo Co, WO<sub>3</sub>  
Idia

**BEEGUM MNG CO**  
431 Rosedale Hwy, Bakersfield  
MINE, Y mi SW of Platten, open  
pit, chromite  
Under devel  
400-TON FLOT MILL, at mine

**BELDEN AMADOR MINES,  
INC**  
Box 20, Pine Grove  
Pres: Donald Drifts  
VP & Gen Mgr: Lora M Banks  
Sec: Don A Weber

**BELDEN MINE**, Pine Grove, 20  
mi E of Jackson, Au, Ag  
40-TON GRAV FLOT MILL

**B & B MNG & MFG CO**  
1534 N Curson Ave, Los  
Angeles 46

Gen Mgr: J H Bennett  
Asst Gen Mgr: Max Barginski  
INDEPENDENT MINE, 2 mi  
from Aguerberry Pt, Death  
Valley, undergr, Au, W, Ag  
Prod: 10-25 tons  
40-TON GRAV-CYAN-AMAL MILL,  
Harrisburg Flak  
Mine & Mill Supt: J H Bennett

**BENNETT MNG CO**  
Big Bar  
MINE, Trinity Co, placer, Au, Ag  
Idia

**BENNETT, PERRY T**  
Box 224, Weaverville  
REX MINE, Trinity Riv dist,  
hydraulic placer, Au

**BERNSTEIN, M L**  
Box 181, Weaverville  
ELMWOOD & GARDNER MINES, 23  
mi from Weaverville, undergr,  
surface  
20-TON MILL

**BERG, ROY M**  
Box 478, Desert Center  
CAP HUNTER LOPE, Chuckawalla  
dist, Pb, Ag  
Idia

**BERG & SCIOCCHETTI**  
Box 637, Hollister  
JUNIPER MINE, Poictes, 51 mi  
SE of Hollister, undergr, Hg  
Mine Supt: Louis Sciochetti

**BEST MINES CO**  
Box 177, Downsville  
Pres: I L Neil  
VP: B C Austin  
Gen Mgr: L L Huelsdoek  
GOLD BLUFF BRUSH CR &  
OXFORD MINES, undergr, Au  
Mine Supt: W T Reed, Jr  
Engr: B C Austin  
FLOT MILL  
Supt: John Folsom  
Foreman: Vernon Huffman

**BIG GOLD MINE**  
Box 251, Randburg  
Opr: J M Kretz  
Au, WO<sub>3</sub>

**BILLS, L C**  
3814 Chestnut Ave, Long Beach  
JIM TOM CLAIM, Randburg  
dist, Au  
ADAIR MINE, WO<sub>3</sub>

**BISHOP CONC & CLEANING  
CO**  
Bishop  
CUSTOM MILL, & base metal ores  
WO<sub>3</sub>

**BLACKSTONE MINE**  
5208 Barrett Ave, Richmond  
Gen Mgr: L A Sanchez  
BLACKSTONE MINE, 4 mi N of  
West Point, undergr, Au, Ag, Pb  
Supt: Elliot H Syme  
Foreman: Louis Sanchez  
20-TON FLOT MILL  
Foreman: Tony Partel  
SHELTER, Au, Ag  
Idia

**BLEW JORDAN ZINC MINE**  
2821 Bichel St, Los Angeles 31  
Owner: R B Lytle  
MINE, 18 mi NW of Fontana,  
undergr, Zn, Pb, Ag, Cd  
Under devel

**BLICKENSTAFF, E B**  
Mojave  
STANDARD LOPE MINE, Mojave  
dist, Au, Ag  
Idia

**BLUE RIDGE MIDWAY  
GOLD MINES CO, LTD**  
Callahan  
Pres: Gerald B Hartley  
Sec-Treas: S B Hartley  
TIPTOP & HILTON CR MINES,  
Mono Co, WO<sub>3</sub>  
SUGAR HILL MINE, Callahan,  
Au  
Idia  
BIG BLUE MINE, Callahan, Cu  
Idia  
PILOT MINE, Downsville, Au  
Idia

**BLTYNE MANGANESE CO**  
8845 W Olympic Blvd,  
Beverly Hills  
ARLINGTON GROUP MINE,  
Riverside Co, Mn  
(Leased to Dan Figueroa)

**BON TON MINING CO**  
Murphys  
BOWER LOPE MINE, East Ball  
dist, Au, Ag  
Idia

**BRADFORD, L M**  
Box 287, Madera  
DAULTON MINE, Daulton dist,  
Ag, Cu, Pb  
Idia



**BRADLEY & EKSTROM, INC**

329 Market St., San Francisco  
 Pres: E O Ekstrom  
 VP & Gen Mgr: R F Holmke  
 Sec: M E Bradley  
**MINES**, Calif., Oregon, Nev & Wash, undergr & open pit  
 Cr, Fe, Mn, WO.  
 Mine Supt: O A Fluhman  
 Mine Foreman: C A Barton  
**150-TON MILL CASTELLA**  
 Mill Supt: D T Schuster

**BRADLEY MINING CO**

1032 Crocker Bldg., San Francisco

Pres: Worthen Bradley  
 Sec-Treas: E A Griffin  
**NEED MINE**, Monticello, Hg  
**SULPHUR BANK MINE**, Clearlake Oaks, Hg  
**GREAT WESTERN MINE**, Middletown, Hg  
 (See Idaho)

**BRIGGS, HARRY E**

Box 413, Trona  
**WIND CLOUD MINE**, 10 mi E of Ballarat, Panamint Mts, undergr  
 Au, Ag, Pb  
 Under devel  
**SOUTHERN HOMESTEAK MINE**, 1 mi S of Ballarat, undergr.  
 Au, Ag  
 Under devel

**BROCK, ROBERT**

River Pt., Box 33, Madera  
**HUSKELL PROP.**, Madera Co., Au  
 Idle

**BROWN, EUGENE R**

O'Brien, Oregon  
**HIGH PLATEAU MINE**, Del Norte Co., Cr

**BROWN, JOSEPH GABEL**

Campioneville  
**JUBILEE (DEPT) HILL MINE**, placer, Au  
**PIKE**, Indian Hill dist., Au, Ag

**BROWN BEAR MINES**

Box 48, French Gulch  
 Gen Mgr & Consul Engr: E E Erich  
**BROWN BEAR, TANGLE BLUE & RED MINES**, 12 mi W of French Gulch, Shasta Co., undergr, Au  
 Idle  
**15-TON GRAY-FLAT MILL**  
 at Brown Bear  
**30-TON GRAY-FLAT MILL**  
 at Tangle Blue

**BROWN'S CREEK PLACER**

Box 23, Weaverville  
**GOLD PLACER**, Trinity Co

**BROWNSTONE MNG CO, INC**

Box 390, Bishop  
 Pres & Gen Supt: W V Skinner  
**BROWNSTONE MINE**, Bishop, 30 mi W of Bishop, undergr, scheelite  
**LE MOYNE MINE**, 10 mi NW of Trona Pass, Death Valley, undergr, Pb, Ag, Au  
 Prod: 20 tons  
 Mine Supt: W V Skinner

**BUCHENAU, H J**

Star St., Box 17, Madera  
**JESSE BELL MINE**, 15 mi SE of Madera, undergr, Cu, Au, Ag  
 Under devel  
 Prod: 30 tons  
 Mine Supt: Bud Syms  
**30-TON FLOT MILL**, Garfield, Utah  
 Mill Supt: Pete Roesti

**BUCKMAN LABORATORIES, INC. MNG DIV**

Geyser Road, Cloverdale  
 Pres & Gen Mgr: Dr S J Buckman  
 VP: W D Sullivan  
 Sec-Treas: C H Turner  
 Purch Agt: M Blackstone  
**BUCKMAN MINES**, undergr, open pit, Hg  
 Under devel

Senior Advisor: C A Baumister  
 Open pit Foreman: S Waggoner  
 Undergr Foreman: T Sullivan  
 Prod: 100 tons  
**150-TON ROTARY FURNACE**  
 Foreman: G E Martinson

**BURMA VISTA NO 2 MINE**

Box 25, Redding  
 Owner: H G Graves  
**MINE**, 3 mi W of Redding, Au, Cu  
**24-TON FLOT MILL**  
 Idle

**BUNKER HILL MNG CO**

Box 13-7, Redding  
 Mgr & Eng: A Mansfield  
**BUNKER HILL MINE**, 3 mi NW of Redding, undergr & surface, Au, Ag  
 Cu  
 Foreman: Peter Kamuk

**BURTON MINES, INC**

Remond  
 Mgr: C G Burton  
 Asst Mgr: G A Settle  
 Purch Agt: George McNamee  
**TROPICO MINE**, 5 mi W of Rosemond, undergr, Au, Ag  
**RUTH MINE**, 13 mi NW of Trona, undergr, Au, Ag  
 Idle  
**150-TON CYANIDE MILL**  
 Foreman: Alec Burton

**BUTTE CREEK ROCK CO**

Box 311, Chico  
**BUTTE CREEK GRAVEL PLANT**, Butte Creek dist., Au, Ag

**BUTTE LODE MNG CO**

Box 100, Randsburg  
**BUTTE LODE MINE**, Kern Co., undergr, Au, Ag  
**CUSTOM MILL**

**BUTZ, ALBERT**

Box 1103, Nevada City  
**SUNSHINE LODE**, Grass Valley, Au  
 Idle

**C & H MATERIALS CO**

P O Box 628, Oildale  
**C & H GRAVEL PLANT**, Bakersfield dist., sand and gravel, Au, Ag

**C A M LEASING CO**

Iowa Hill  
**OCCIDENTAL MINE**, Placer Co., Au  
 Idle

**C M S STRATEGIC METALS, INC**

8000 SE Foster Rd., Portland 8  
**CLAIMS**, Del Norte Co., Mn  
 Idle

**CALAVERAS CENTRAL GOLD MNG CO, LTD**

Angels Camp  
 Pres & Gen Mgr: Harry Sears  
 Mgr: Desmond Sears  
**MINE**, undergr, Au  
**CRUSHING & SCRUBBING PL.**, Au, Ag  
 Prod: 600-800 tons  
 Under devel

**CALIF INDUSTRIAL MINERALS CO**

Box 188, Friant  
 Owner: Forrest S Taylor  
**TAYLOR MINE**, nr Friant, volcanic ash  
**150-TON DRY MILL**

**CALIFORNIA LIMESTONE PRODUCTS**

130 S Beverly Dr., Beverly Hills  
 Pres & Mgr: R F Hall  
 VP: John Soovajian  
 Sec-Treas: Marjorie Willows, Jr  
**LANGDON MINE**, Box 108, Blythe  
 Gen Mgr: R S Hall  
 Gen Supt: Wm Sutton  
 Mech Engr: Roy Williams

**CALIFORNIA PLACER MINE**

Sailor Flat  
 Owners: Marie & Morton S Martin,  
 150 Arlington Ave., Berkeley 7  
 Gen Mgr: R T Martin  
 Geol: Chas S Haley  
**CALIFORNIA PLACER**, 24 mi E of Forest Hill on Forest Hill divide, hydraulic, Au  
 Mine Supt: M S Martin

**CALIF QUICKSILVER MINES, INC**

703 Market St., San Francisco 5  
 Pres: R F O'Bryan  
 VP: R P Hasenauer  
 Sec: W H Hill  
**ABBOTT MINE**, Williams  
 Gen Mgr: C O Reed  
 Genl: Fred Hanson  
 Prod: 30-35 tons  
**20-TON GRAY MILL** at mine  
**RETORT & BLAST FURN** at mine

**CALIFORNIA TUNGSTEN**

951 Park Bldg., Salt Lake City, Utah  
**TRIANGLE MINE**, Kern Co., W  
 Idle

**CALIF URANIUM CORP (FORMERLY MARIGOLD OIL & MNG ENTER)**

7053 Arcola Ave., San Valley  
 Pres: James T Vellings  
 VP: Lois J Vellings  
 Sec: Gertrude Cornell  
**MINE**, South Fossil Bed, north Barstow, undergr, uraninite, Cu  
 Under devel

**CALIVADA DEVEL CO, INC**

Box 4, Garden Valley  
 Pres & Gen Mgr: Hal T Hall  
 VP: Louis H Hall  
 Sec & Asst Gen Mgr: E E Hall, Jr  
 Elec Engr: Edmund Cheek  
 Gen Supt: R A Hathaway  
 Mech Engr: Frank Boucher  
**EL DORADO COPPER MINE**, 12 mi N of Placerville, undergr, Cu  
 Under devel  
**150-TON FLOT MILL**

**CALRADO DEVEL CO**

139 S Beverly Dr., Beverly Hills  
 Co-partners: R S Hall & Maurice Willows, Jr  
**BLACK JACK-ARLINGTON MANGANESE MINE**, 23 mi NW of Blythe, surface, Mn

**CAMPION, IVAN H**

Somerset via Coles Station  
**IRISH SLIDE MINE**, 23 mi SE of Placerville, undergr, placer, Au, Ag

**CAMPENTER, A C**

Box 570, Yreka  
**THE WINNER LODE**, Yreka dist., Au, Ag  
 Idle

**CASA DIABLO MINE**

Bishop  
 Mgr: J W Bertrom  
**MINE**, Mono Co., Au, Ag, Pb

**CASTLE, E C**

Box 130, Bishop  
**WHITE CAPS MINE**, Inyo Co., WO<sub>3</sub>  
 Idle

**CASTRO MNG CO**

1819 San Luis Dr., San Luis Obispo  
 Gen Part: D A Hall, Geo I Barnett  
**CASTRO CHROME MINE**, open pit, Cr  
 Prod: 75 tons  
**CONCEN**, San Luis Obispo

**CENTRAL ROCK & SAND CO**

P O Box 425, Sanger  
 Gen Mgr: John D Hare  
**SAND & GRAVEL PIT**, 2 1/2 mi E of Sanger, sand, rock, Au  
 Prod: 400 tons

**CHAMBERLIN, CHARLES**

Box 24, Johannesburg  
**ON GROUP**, Kern Co., undergr, Au  
 Idle

**CHAPMAN & SONS**

Junction City  
**CHAPMAN & FISHER PLACERS**, Trinity Co., hydraulic, Au  
 Supt: G P Chapman  
 Idle

**CHLORIDE CLIFFS MINE**

Beatty, Nev  
**MINE**, Inyo Co., undergr, Au, Pb  
 Idle

**CROWCHILLA DREDGE CO**

Box 348, Whittier  
**CROWCHILLA MINE**, Madera Co., placer, dredge, Au  
 Idle

**CITY BLUE GRAVEL MINE**

Box 205, Redding  
 Officers: H G Hampton, R H Cochran, Donald Playlinson  
**MINE**, 1 mi W of Redding, undergr, Au  
**25-TON FLOT MILL**  
 Idle

**CLAIR BROS**

Box 5, Trona  
**MARGARET MINE**, Redding, South Park dist., Inyo Co., undergr, Au, Ag

**CLAREMONT MNG CO**

134 W 2nd St., Claremont  
 Pres: Charles L Workman  
 VP: Earl L Stepp

**Sec & Gen Supt: Harry B**

Hollingsworth  
**SACAMORE MINE**, 17 mi S of Ivanpah, undergr, huberite, Pb, Ag, Cu, Zn  
 Idle

**CLARK, CHARLES A**

P O Box -1, El Dorado  
**OPHR LODE**, Mother Lode dist., Au, Ag  
 Idle

**CLARK BROS**

Star Rt., Box 328, Folsom  
**PINE KNOLL MINE**, West Belt dist., Au, Ag  
 Idle

**COLEMAN, CARLTON**

c/o Nimschew State, Chico  
**COLEMAN PLACER RANCH**, Butte Creek dist., Au, Ag  
 Idle

**COLLINS, JOHN T**

Julian  
**ELLA GROUP MINE**, San Diego Co., undergr, Au, Ag  
 Idle

**COMPTON, WM M**

1801 Pacific Ave., San Leandro  
**URANIUM CL**, near Doyle  
 Producing

**CONLEY, L J**

101 Winchester, Medford, Oregon  
**BLACK BEAR MINE**, Shasta Co., Cr

**CONROY, EVERETT R**

Horse Creek  
**BARTON PLACER MINE**, Humboldt Riv dist., Au, Ag  
 Idle

**CONS MANGANESE CORP**

300 Montgomery St., San Francisco  
**MINE**, Sonoma Co., Mn

**CONS ROCK PRODUCTS CO**

Box 1950, Terminal Annex, Los Angeles 54  
 Pres: Robert Mitchell  
 VP: Q W Best  
 Sec: S F Whaley  
 Prod Mgr: R C Griffin  
 Purch Agt: L L Haney  
 Transp Mgr: W L Good  
**LARGO PLANT**, Atsuma, surface, Au  
 Supt: G A Lagrone

**CONSOLIDATED TUNGSTEN**

14500 E Mt View, Kingsburg  
**MINE**, STAR RT, Orust, undergr, open pit, WO<sub>3</sub>  
 Pres & Gen Mgr: Claid Roush  
 VP & Gen Supt: Claid Roush, Jr  
**40-TON MILL**, Drum Valley  
 Mill Supt: Al Bennet

**CONTINI BROS**

Box 183, Jackson  
 Pres & Gen Mgr: Nick Contini  
 VP & Asst Gen Mgr: Bert Contini  
 Gen Supt: Paul Contini  
 Mech Engr: John Contini  
**CONTINI THREE HORSEMAN, BCL MINES**, 7 1/4 mi E of Jackson on Hwy 38, undergr, Au  
 Prod: 10 tons

**STAMP MILL, Irish Town**

Mill Supt: V Garbarini

**COPPER QUEEN MNG CO**

c/o Miles W Edgill, President  
 1331 "F" St., Sacramento  
**COPPER QUEEN GROUP LODE**, Sawpit Flat dist., Cu, Au, Ag  
 Idle

**CORDERO MINING CO**

131 University Ave., Palo Alto  
 VP: S H Williston  
 Gen Mgr: J Eldon Gilbert  
**MAY LUNBY MINE**, Mawa, 10 mi W of Mono Lake, Au  
 Idle  
**QUEEN SABE MINE**, Hamilton, 10 mi E of Hollister, undergr, Pb  
 Idle  
 Gen Supt: Herbert Mitchell  
 (See Nevada, Oregon)

**CORONADO COPPER & ZINC CO**

823 W 6th St., Los Angeles 14  
 Pres: R W Moore  
 VP: H T Mudd  
 Gen Supt: K C Richmond  
 Sec & Purch Agt: A I Davidson  
 (See Arizona)



**CRADY & SULLIVAN**

Jackson  
MINE, Amador Co., Ma  
Idle

**CRAIG, BERT**

Box 6, Escondido  
CRAIG MINE, San Bernardino Co.,  
WO<sub>3</sub>  
Idle

**CRAIG, MRS C M**

2437 Portola Way, Sacramento  
PERKINS GRAVEL CO PLANT  
Americas River dist, placer, Au,  
Ag  
HAGGINS GRAVEL PITS &  
DEL PASO GRAVEL PITS,  
Folsom dist

**CRAIG, SAM**

Box 71, Essex  
JUMBO & PACKARD CLAIMS,  
San Bernardino Co., WO<sub>3</sub>  
Idle

**CRAWFORD, G**

Bishop  
GROOKS MINE, Inyo Co., WO<sub>3</sub>  
Idle

**CRAWFORD, LOWELL V &**

COOK, JOSEPH W  
Tecopa  
PADDY'S PUDELO LODE, Confidence  
dist, Pb, Ag, Au  
Idle

**CROTSCHBERG, S D**

Barstow  
BRUSH GREEN MINE, Kern Co., WO<sub>3</sub>  
Idle

**CRUMPTON, VICTOR**

Happy Camp  
MINE, Shasta Co., Au, Ag  
Idle

**CRYSTAL CAVE MNG CO**

Box 783, Las Vegas, Nev  
CARBONATE KING ZINC LODE,  
Yavapai dist, Zn, Au, Ag, Pb  
Idle

**CUMMINGS, M L**

301 Montgomery Way, Sacramento  
FRIENDLY GROUP, Sawpit dist,  
placer, Au, Ag  
Idle

**CUMMINGS, THOMAS M**

Denay  
MANZANITA PLACER MINE,  
New Hill dist, Va, Ag  
Idle

**CYCLONE GAP MINE**

Box 478, Grants Pass, Ore  
Lessee: Wm S & Ruth Robertson  
& Assoc  
MINE, Shasta Co., 30 mi S of  
O'Brien, Ore, undergr, Cr  
Mine Supt: W S Robertson  
Asst Mine Supt: A E Ekstrand  
Mine Foreman: Bill Romberger  
Prod: 400 tons monthly

**DAKIN CO**

2811 Millside Dr, Burlingame  
Pres: Fred H Dakin  
VP: Wesley W Kergan  
Sec: Henrietta Dakin  
UNCLE SAM (OLD) MINE, 10 mi  
NW of Central City, Shasta Co.,  
undergr, Au, Cu, Zn, Ag  
Idle

**DAVIES, TOM**

Caliente  
JUAN JOSE MINE, Kern Co.,  
undergr, Au, Ag  
MINNIE ELLEN MINE, Tulare Co  
P & D LODE, Agua Caliente dist,  
Ag, Au  
Idle

**DAVIS, CLINTON F**

Box 12, Greenwood  
C B DAVIS PROP (McGRUBB) LODE,  
Modoc Lode dist, Au, Ag  
Idle

**DAVIS, EDWARD D**

1144 13th St, San Bernardino  
COPPER CRYSTAL LODE, State  
Range dist, Pb, Ag, Cu, Zn  
Idle

**DAVIS, ROBERT E**

Rt 1, Box 8853, Sacramento  
BRIGHTON SAND & GRAVEL PLANT,  
Folsom dist, Au, Ag

**DAVIS, W O**

1848 103rd Ave, Oakland  
REDCAP GROUP, Oriskany dist,  
placer, Au, Ag  
Idle

**DEL MONTE PROPERTIES CO,**

SAND DIV  
Box 130, Pacific Grove  
Pres: S F B Morse  
Plant Mgr: H H Dein  
Sales Mgr: P C Valentine  
Metal: Henry Benesch  
Gen Supt: C J Hosterman  
MINE, Del Monte Forest, Pebble  
Beach, surface, glass sand, quartz  
feldspar, gr sand  
Prod: 600 tons  
400-TON FLOT MILL

**DEL NORTE MINING CO**

Mojave  
DEL NORTE MINE, Windrose dist,  
Iode, Au  
Idle

**DELL OSSO GOLD MNG CO**

Box 3435, Terminal Annex,  
Los Angeles 34  
DELL OSSO LODE, Talverd mng  
dist, Au, Ag, lime, garnets & silica

**DESERT TALC & CLAY CO**

620 W LaBrea Ave, Los Angeles  
Pres: R J Schroeder  
VP: Drew Schroeder  
Sec: Hazel Hawkins  
YUCCA GROVE MINE, 23 mi E of  
Baker, undergr, talc  
Prod: 10-12,000 tons annually

**DICALITE DIV, GREAT LAKES**

CARBON CORP  
612 S Flower St, Los Angeles 17  
Pres: George Shakel, Jr  
Opr Mgr: E A Harris  
Gen Mgr: D L Marlett  
Purch Agt: T D Moir, Box C, Lompoc  
RADAR HILL MINE, Box 107, Waterlos  
PLANT 5, Y mi W of Lompoc, surface  
diatomaceous earth  
MILL, Lompoc  
Mill Supt: E D Ingram  
Asst Supt: R W Yocum  
Foreman: Martin Grygasho  
(See Gr Lakes Carbon Corp, Colo, Nev,  
New Mex, NY, Ore)

**DICKEY EXPLOR CO**

Allegheny  
ORIENTAL LODE MINE  
Gen Mgr: Donald R Dickey  
Gen Supt: R P DeGriso  
Geol: W Fuller  
Met: E Hutchinson  
Undergr, Au, Ag  
Prod: 20 tons  
75-TON FLOT-GRAV MILL  
Mill Foreman: W Vivsworth

**DILT ORO GRANDE MNG CO**

414 21st St, Merced  
Opr: J J Fulham  
MINE, Mariposa Co, Au  
Idle

**DITCHLINE MINING CO**

Box 124, Lewiston  
TRINITY RIVER LODE, 1/3 mi NW  
of Lewiston, undergr, open pit,  
scheelite, Au  
Mine Supt: Tom Gay  
Mine Engr: Alex Halliwell  
25-TON GRAV MILL  
Mill Supt: Shorty Spears

**DOBBS, D A & ASSOC**

1106 W Isabel St, Burbank  
BRONZE MINE, San Bernardino  
Co., WO<sub>3</sub>  
Idle

**DONAHUE, LYLE**

Oasis via Big Pine  
TARGET GROUP LODE & MILL,  
Deep Springs dist, WO<sub>3</sub>  
Idle

**DONNER, H L**

Milton via Farmington  
DONNER & LOFT LOG MINING,  
Calaveras Co, Au  
Idle

**DOSCHER, CHARLES,**

VISCOVICH, V &  
MILOROVICH, STEVE  
Pine Grove  
JUMBO LODE, East Salt dist,  
Au, Ag  
Idle

**DOUBLE O TIMBER &**

MNG CO  
350 Davis St, San Francisco 11  
Pres: L W Giesener  
VP: R M Giesener  
Gen Mgr & Sec: Albert S Simrak  
Geol: Fred L Humphrey  
Met: J E Siegfried  
MINE, 50 mi NE of Auburn, placer,  
Au  
Under devel

**EARLY MORNING MNG CO**

1185 Monterey St, San Luis  
Obispo  
EARLY MORNING MINE, Fresno Co.,  
Cr  
Idle

**EAST RIDGE CO**

633 Shatto Place, Los Angeles 5  
Pres: C E Byrne  
VP: F Maltenhauer  
Sec: L M Smith  
(See Colo)

**EDGECLUMBE EXPLOR CO**

281 S Hudson, Pasadena 3  
Pres: Mrs Charlotte Morgan  
VP: C A Haley  
Sec: Arnold Holden  
Treas & Gen Mgr: G H Morgan  
(See Alaska)

**EDMONDS, W H & VERA O**

Raymond  
VERA O PLACER, Au, Ag, ilmenite,  
Zr, Ti, Os, WO<sub>3</sub>  
Idle

**EDWARDS, R A**

Inyokern  
SNOW WHITE MINE, Kern Co., WO<sub>3</sub>  
Idle

**EDWARDS, WILLIAM G**

Johnsville  
FOUR HILLS MINE, Sierra Co.,  
undergr, Au

**EL DORADO LIMESTONE CO**

Shingler  
Pres: J H Bell  
VP: E O Schmitt  
Gen Mgr: C R Nichols  
Sec: H F Armes  
Mach Engr: Paul Ransom  
LIMESTONE MINE, 4 1/2 mi SW of  
Shingle Springs, undergr, limestone  
Prod: 400 tons  
Mine Supt: F G De Berry  
MILL, Crushing, Washing, Screening

**EMPIRE STAR MINES CO,**

LTD  
Grass Valley  
Pres: J H C Mann  
VP: Carol Searle  
Gen Mgr: H R Fitzpatrick  
Asst Gen Mgr: F L Wilson  
Metal: James T Curry  
Elec Engr: A Brass  
Sec: John E D Grunow  
Mach Engr: Phil Keast  
Safety Engr: C N Plumtree  
Purch Agt: W E Carmen  
EMPIRE STAR MINE, Grass Valley,  
undergr, Au, Ag  
Mine Foreman: E Brokenshire,  
T Thompson, W Wales  
Ch Engr: M White  
400-TON FLOT-CYAN MILL  
Mill Foreman: A Dowdell,  
C Edwards  
Assay: William Feil  
RETORT FURNACE  
(See Newmont Mag Corp, NY)

**FAIR OAKS GRAVEL CO**

4000 Illinois Ave, Fair Oaks  
GRAVEL PLANT, Sacramento Co.,  
Au  
FAIRBANKS, L D  
Box B, Daggett  
DONNA LOY MINE, Inyo Co.,  
Au  
Idle  
FAIRVIEW CHROME MINE  
640 Lane St, Yreka  
Owner: H E Ellickson  
FAIRVIEW MINE, Humboldt  
Idle  
FAIRVIEW PLACERS  
Lewiston  
Joint venture of Sunshine Mng Co,  
The Lehman Corp & The Idaho  
Canadian Dredging Co  
Owner: Rep & Gen Mgr:  
H B Murphy

Purch Agt: A D Soule  
PLACER, 10 mi N of Lewiston,  
8,000 yd bucket dredge, Au, Ag  
Supt: H C Young

**FENTON, ORION**

Graveland  
EUREKA LODE, East Belt dist  
undergr, Au, Ag  
MILL, Big Oak Flat

**FERNANDEZ, FRANK C**

1326 Pine St, Santa Monica  
Gen Mgr: George Grove  
MONO MUTE RAINBOW MINE,  
16 mi NE of Bishop, undergr  
surface, Au, Ag, Pb  
25-TON GRAV MILL, Mono  
Canyon  
Under devel

**FIDELITY MINE**

Columbia  
Mgr: Wayne Stoenough  
MINE, Au, Ag  
Supt: Vernon Ray  
3-TON GRAV MILL  
Idle

**FIFE, E J & E M**

Star Rt, Box 738, Lucerne  
Valley  
BUCKHORN LODE, SW of  
Lucerne Valley, surface, Au, Ag  
Idle  
HIGH POINT LODE, NE of Lucerne  
Valley, undergr, Au, Ag  
Idle

**FIGUEROA MINES**

Box 453, Blythe  
Pres: Dan Figueroa  
Gen Mgr: Danny Figueroa  
Asst Mgr: Gilbert Figueroa  
Sec: Miguel A. Figueroa  
Gen Supt: Alfred Figueroa  
MANGANESE CANYON'S  
ARLINGTON CLAIMS, 32 mi NW of  
Blythe, undergr, surface, Mn  
Prod: 20 tons

**FILLIER, EARL J**

Coarse Gold, Madera Co  
GOLDEN HIBBON, TEXAS FLAT,  
& KLUCKITY KLUCK GROUP LODES,  
1 mi N of Coarse Gold, undergr, Au  
Idle

**FINLEY, ROSS & VIGNICH,**

TOM  
Panama Springs, Lone Pine  
Opr: McFarland & Hilfinger,  
23 Pinehurst Ave, Tooele, Utah  
MINNETTA LODE, Modoc dist, Pb,  
Au, Ag, Zn, Cu  
Idle

**FLEDDERMAN, A G**

403 Butte St, Yreka  
FLEDDERMAN MINE, Yreka dist,  
placer, Au, Ag  
Idle

**FLINTKOTE CO**

55th & Alameda, Los Angeles  
VOORHEES MINE, Copperopolis,  
azurite  
Idle

**FOOD MACHINERY**

CHEMICAL CORP,  
WESTVACO  
MIN PROD DIV  
Newark  
Res Mgr: R F Moran  
WESTVACO MINE, Hollister,  
surface, dolomite  
Mine Supt: R Swadlowhurst

**FORD, ALEX**

Box 31, Yreka  
FRAGA MINE, Yreka dist, placer,  
Au, Ag  
Idle

**FOREMAN & FOREMAN**

Box 175, Darwin  
Pres: L D Foreman  
Gen Mgr: R L Foreman  
DEFENSE MINE, 11 mi S of  
Panama Springs, undergr,  
Pb, Ag

**4-D'S MINING CO**

Rt 1, Box 263-B, Grass  
Valley  
MINE, 40 mi E of Nevada City,  
undergr, Au, Pb  
Mine Supt: C P O'Connor  
Under devel

## FRYE, HERVEY V

c/o Inskip Inn, Stirling City  
MONEY MINE, Butte Co.,  
open pit, placer, Au  
Idle

## FUNK, HAROLD

Rt 1, Box 782, Crescent City  
OLD DOE MINE, 12 mi NE of  
Smith Riv., undergr., Cr  
Mine Foreman: W H Henley  
Ingr. Geo Pollard

## GAMBLE, GEORGE

1411 Waverly St., Palo Alto  
KNOXVILLE MINE, Napa Co., Hg  
Idle

## GARCIA, MARINO &amp;

ETHEL  
Middletown  
JAMES CREEK PLACER, Napa Co., Hg  
Idle

## GARIBALDI BROS

Volcano  
GARIBALDI MINE, Amador Co., Au  
Idle

## GARNETT DIKE MINE

King River Hatchery  
Fresno  
MINE, Fresno Co., WO<sub>3</sub>

## EVANS, GARRETT, RALSTON

& RALSTON  
Box 160, Johannesburg  
PIONEER MINE, E of Johannesburg,  
undergr., Au  
GRAY MILL

## GEIGER, KARL

Box 1138, Indio  
DUPLER LOSE, Dale Dist., Au, Ag  
GOLDEN ROD LOSE

## GENERAL DREDGING CO

Richmond  
Partners: Oddings, Haines &  
Boucher  
PLACER, 2 mi from Polson,  
Orangino, Au, Ag  
Idle

## GENERAL DREDGE #3

American Riv Dist, placer,  
Au, Ag, Pb  
Idle

## GEORGE, FRANCIS

Cecilville  
BLACK HAWK MINE, Shasta Co., Cr

## GHEZZI &amp; HARRY

107 Funston Ave., San Anselmo  
LAZAR LOSE, Mosher Lode dist., Au

## GILES BROS

Frederick H & Daniel A Giles  
Allegany  
GENERAL SHERMAN, KPOOLIN  
LAKES  
Idle

## GOLD CROWN LOSE

(See Gold Crown Mng Corp)

## GILES, JOSEPH

Hummer  
HUMMINGBIRD MINE, Shasta Co.,  
undergr., Au, Ag

## GIPSY MNG &amp; MFG CO

8075 Glenauk Blvd., San  
Valley  
Pres: J H Bennett  
Sec: A E Bennett  
MINE, open pit, Au, WO<sub>3</sub>  
Prod: 80 tons  
80-TON FLOT GRAY MILL,  
Bakersfield

## GLADDING, McBEAN &amp; CO

2901 Los Feliz Blvd., Los  
Angeles 38  
Box 14, Ino  
Pres: F B Orman  
Exec VP: J W Mahoney  
Sec: S S Sculley  
Treas: E M Dundas  
Gen Supt: M G Vorachek  
Perch Agt: W B Mason  
MINES, Clay, quartzite, feldspar  
Prod: 1,000 tons  
MILLS, Lincoln, Ino  
Mill Supt: J F Perry

## GLENN, ALBERT F

Box 102, Garwin  
SILVER RICK LARSE, 18 mi N  
of Garwin, undergr., Zn, Ag, Pb,  
Au  
Under devel

## GLENN CO

234 E 18th St., Oakland 1  
Owner & Gen Mgr: George G Glenn  
Gen Supt: Harry Odgers  
MARBLE SPRINGS MINE, 12 mi E  
of Conterville, undergr., Au, Ag,  
W  
55-TON FLOT MILL  
Mill Supt: Frank Lane  
Idle

## GLIDDEN CO, THE

Box 430, Redding  
Gen Mgr: H L Rhodes  
Asst Gen Mgr: E L Nelson  
Gen Supt: Donald Odell  
BULLY HILL MINE, Lake Shasta,  
undergr.  
MILL, Redding  
Idle  
(See H C, Ohio)

## GOENRING, A A

Oroville, via Big Pine  
KILROY MINE, Inyo Co., W

## GOLD CROWN MNG CORP

Allegany  
Pres: John La Rue  
VP: Glen McClain  
Gen Mgr & Sec-Treas: Harriette  
Duke  
GOLD CROWN MINE, undergr.,  
Au, Ag  
Gen Supt: Daniel & Frederick  
Giles  
Prod: 50 tons

## GOLD HILL DREDGING CO

211 California St., San Francisco  
Pres & Gen Mgr: J J Coney  
Sec: L W Kordell  
Perch Agt: E O Perkins  
PLACER FROM on Mokelumne  
Riv in San Joaquin Co, Feather  
R in Yuba Co, bucketline, Au,  
Ag  
Supt: H L Coney  
Idle

## GOLDEN STAR MINE

Box 206, Inyokern  
Pres: Mrs Ralph Griffin  
VP: Mrs C W Wheeler  
Gen Mgr: C W Wheeler  
Gen Supt: R W Griffin  
MINE, 14 mi W of Inyokern,  
undergr., WO<sub>3</sub>

## GOLDFIELD CONS MINES CO

1 Montgomery St., San Francisco  
VP & Gen Mgr: E A Julian  
OMEGA MINE, Nov Co, hydraulic,  
Au  
Idle  
(See Nev)

## GOOD HOPE MNG CO

120 "O" St., Fresno  
Pres & Gen Mgr: J H Loughood  
MINE, 20 mi E of Visalia, undergr.,  
WO<sub>3</sub>  
Gen Supt: John Gargan  
Prod: 50 tons  
55-TON GRAY MILL  
Mill Supt: John Gargan  
Asst Mill Supt: Don Rohrig

## GOODHUE, J W

Taylorville  
PILOT MINE, Gnomine, Plumas  
Co., surface, undergr., Au, Ag, Cu  
Under devel

## GONZALES, PAUL

1409 Ford Ave., San Jose  
WONDER MINE, San Benito Co  
Hg

## GORDON, L I

5742 1/2 Kraft Ave.,  
Beverly Hillswood  
ONE HILL GROUP LOSE, Los  
Angeles dist., Au, Ag  
Idle

## GOULD, H W &amp; CO

100 Mills Tower, San Francisco 4  
Owner: Malcolm B Gould  
HELEN MINE, 6 mi SW of  
Middletown, Lake Co, Hg  
Under devel  
(See Klaus Mine, Inc & Arizonal)

## GRAHAM &amp; CONLEY

101 Winchester, Modesto, Oro  
FRENCH HILL MINE, 6 mi S of  
Geopost, surface, Cr  
Prod: 6 tons

## GRANDVIEW MNG CO

Desert Center

## OPEN PIT MINE, Desert Center

area, perillite  
PYROPHYLLITE DEPOSIT, 17  
mi from Desert Center  
Under devel  
MERCURY TALC DEPOSITS,  
White Mountain area  
Under devel  
(See Nevada)

## GRANT &amp; DAVIS

c/o Ernest V Grant, Jackson  
BAGERMAN LOSE & MILL,  
East Belt dist., Au, Ag  
Idle

## GREEN, SHERWOOD

218 S "D" St., Madera  
ACE PLACER, Madera Co., Au  
JENSEN PLACER, Friant dist.,  
Au  
Idle

## HARPER, J L

Patrick's Creek Inn, O'Brien,  
Oro  
ELK CAMP MINE, Del Norte  
Co., Cr  
Idle

## HARRIS, MICHAEL

c/o Furnace Creek Ranch,  
Death Valley  
KEANE WONDER EXTENSION  
LOSE, Chloride CRT dist., Au,  
Ag

## HARRIS, P L

c/o Furnace Creek Ranch,  
Death Valley  
BLACK HOLE LOSE, Chloride  
CRT dist., Au, Ag

## HAZEL CREEK MNG CORP

463 Main St., Placerville  
Mgr: G W A Irvine  
LOSE MINE, E Belt dist., Au,  
Ag, Pb

## HEATHER, HARRY F

236 So Oak Knoll Ave., Pasadena  
BRIGHT OUTLOOK MINE, San  
Bernardino Co., WO<sub>3</sub>, Au  
MILL, at mine

## HELMKE, THOMAS &amp;

JANSEN  
320 Market St., San Francisco  
LAMBERT, LITTLE CASTLE  
CREEK, COSTA, CROW CREEK,  
FOREST QUEEN MINES, undergr &  
open pit, Cr  
Mine Supt: O A Fulghum  
Mine Foreman: C A Barton  
350-TON GRAY MILL, Castella  
Mill Supt: D T Schuster

## HENDERSON, F M

1548 No Orange Grove, Pomona  
ELNORS MINE, Inyo Co, talc  
Idle

## HERBERT, O A

Box 67, Plymouth  
WOLIN PROPERTY, Mother Lode  
dist., placer, Au  
Idle

## HERBERT MINER

Rt 3, Box 1564, Porterville  
TUNGSTEN MINE, Tulare Co, W  
Idle

## HERMANN, E T &amp;

KELLAR, GEO  
Box B, Thermal  
H & K MINE, Riverside Co, talc

## HIDDEN VALUE TUNGSTEN

CO  
2700 Builing Ave., Los Angeles  
HIDDEN VALLEY MINE, San  
Bernardino Co, W

## HIGH PEAK TUNGSTEN

MINE  
Bishop  
WO<sub>3</sub>  
Idle

## HILLTOP MINE

Sanger  
Lessons: E G Peron, Ernest &  
A J Peterson  
MINE, Sanger, Trimmer Rt, c/o  
Mason Store, WO<sub>3</sub>  
Gen Mgr: E G Peron  
25-TON GRAY MILL, under constr

## HOEFLER, I W

Box 34, Crescent Mills,  
Plumas Co

## DAG-IAN MINE, undergr., Au

50-TON GRAY MILL

## HOERNER, OSCAR

Newberry  
CLIPPER MT MINE, Kern Co., WO<sub>3</sub>  
Idle

## HOLMAN, J R

1465 E Orange Grove Ave.,  
Pasadena 7  
MISTAKE MINE, 29 mi W of  
Collings, open pit, Cr  
Gen Mgr: J R Holmes  
Mech Engr: F W Wilder, Jr  
Prod: 100 tons  
40-TON GRAY MILL, White Cr  
Mill Supt: F W Wilder, Jr  
(See Oro)

## HOLMESTAKE MNG CO

Box 306, Winterhaven  
Pres & Gen Mgr: E A Holmes  
Asst Gen Mgr: Lee Hardy  
CARGO MUCHACHO GROUP,  
Imperial Co  
Idle  
CASTLE DOME FLUORSPAR,  
Imperial Co  
125-TON FLOT MILL, 4 mi W  
of Winterhaven  
Mill Supt: James G Hardy  
Assay: Harvey Hardy  
(See Arizanal)

## HOMESTAKE MNG CO

100 Bush St., San Francisco  
Pres: Donald H McLaughlin  
VP: Guy H Bjorge  
VP-Treas: Archibald & Galick  
VP: James W Sweet  
Sec: John W Hamilton  
Asst Sec: Wm W Murray  
(See So Dak, Utah, Wyo)

## HOPE SO MINE

c/o R W Leslie, 218 Sureka  
Way, Redding  
MINE, undergr., Au, WO<sub>3</sub>  
Gen Mgr: R W Leslie  
Prod: 30 tons  
20-TON JIG MILL

## HUGHES-VERTIN LIME CO

Box 231, Auburn  
Pres: Cyril Vertin  
Gen Mgr: Frank Corney  
Asst Mgr & Chief Engr: H S  
Dahlman  
Gen Supt: Vaughn Stone  
MINE, 8 mi S of Auburn, r  
surface, CaO  
Prod: 200 tons  
65-TON CALC MILL, Rattlesnake  
Br on Amer Riv  
REFINERY, Rattlesnake Br  
Prod: 14,000 tons

## HUNTLEY INDUST MINERALS

Box 305, Bishop  
Pres: W H Huntley  
Sec-Treas: L G Hummel  
PACIFIC PYROPHYLLITE MINE,  
18 mi NW of Bishop, surface,  
asbestos, clay, WO<sub>3</sub>  
Foreman: D T Davis  
Prod: 100 tons

## IDAHO MARYLAND MINES

CORP  
Box 1026, Grass Valley  
Pres & Gen Mgr: Bert C Austin  
VP & Asst Gen Mgr: Max Beckhold  
Sec: C L Allan  
Exec Engr: Edward M White  
Mech Engr: Joseph Glomann  
Safety Engr: Jack Clark  
IDAHO & BRUNSWICK MINES,  
1-8 1/2 mi NW of Grass Valley,  
undergr., Au, Ag  
Prod: 450 tons  
Mine Foreman: Samuel Yeas  
Mine Engr: E C Whiting  
500-TON FLOT CYAN MILL,  
Mill Foreman: Oliver Peterson  
Assay: Harold Scheave  
(See Utah)

## IGO MINING CO

Box 1-12, Redding  
Pres: R B Tupper  
Gen Mgr: M E Howe  
BIG WYKE MINE, Ino, Ag, Au,  
Pb, Zn  
YANKEE JOHN MINE, Au, Ag, Pb,  
Idle

## INDUSTRIAL MINERALS &amp;

CHEMICAL CO  
6th and Gilman Sts., Berkeley  
MINE, Nevada Co, grinding,  
"barite, other non-metallic min  
(See Nev)

**INDUSTRIAL MNG & MLQ INC**

1400 W Main St, Barstow  
Pres: Ted Heins  
VP: H M Peterson  
Sec-Treas: J A Heins  
MAY QUEEN MINE, open pit, rock crushing & roofing granules  
Gen Mgr: Rod Compton  
Asst Gen Mgr: Granville Haines  
Genl: Louis Hopper  
Mech Eng: Ralph Carey  
Elec Eng: Chas Neal  
Mine Supt: Chas Young

**INTERNATL METALLURGICAL CHROME CORP**

1026 Chorro St, San Luis Obispo  
Pres: S J Herman  
VP: G Bartol  
Gen Mgr: W B Arness  
Sec: Leo B Lubovitz  
NORCROSS MINE, 6 mi NW of San Luis Obispo, surface, Cr  
Under devel  
150-TON GRAY MILL  
Foreman: H J Frenoy

**INYO MARBLE CO**

725-732 E 29th St, Los Angeles 11  
Pres: W D Penny  
VP: D H Dunn  
Sec: C A Cravens  
Treas: A W Thompson  
CONS INYO PROPERTIES, Dolomite via Lone Pine, surface, marble  
Dimension: 8' x 10' x 12'  
75-TON GRAY MILL  
Supt: D H Dunn

**INYO MINING CO**

2703 Glendale Blvd, Los Angeles  
VICTOR & VICTORIA MINES,  
Inyo Co, WO<sub>3</sub>  
Idle

**INYO SOIL SULPHUR CO**

310 Pacific St, Bakersfield  
CRATER CLAIMS, Inyo Co, S

**J & W MINING CO**

Corvallis, Ore  
Pres: Norman Johnson  
Sec-Treas: Chas S Wilson  
TYSON CHROME MINE, Gasquet,  
20 mi NE of Crescent City, under-  
gr, surface, Cr  
Supt: William Whipple  
Cons Engr: K O Watkins  
Idle

**JACKSON, R H**

Box 111, Midpines  
EARLY MINE, Mariposa Co, W  
MEXICAN DIGGINGS MINE,  
Mariposa Co, undergr, Au  
Under devel

**JAMES MNG CO**

1465 E Orange Grove Ave,  
Pasadena 7  
Partners: Jack M. James,  
J R Corbett, Loren Crabtree,  
J R Holman  
SAW MILL CREEK MINE, San  
Benito Co, open pit, Cr  
Mech Eng: Jack M James  
Prod: 50 tons  
50-TON MILL, at mine

**JANZEN, PETER**

Gasquet  
CHROME HILL, ELK CAMP,  
Patrick's Cr, Butte Co, Cr

**JOHN-MANVILLE**

Lompoc  
Gen Mgr: O B Westmont  
LOMPOC MINE, surface,  
diamonaceous silica  
(See N Y)

**JORDAN BROS**

Box 277, Ashwam  
Gen Mgr: Robert C Jordan  
MICKIE MINES, undergr, Ge,  
WO<sub>3</sub>

**JOUBERT PLACER MINE**

Sawyers Bar  
Owner: Louis J Joubert  
HYDRAULIC PLACER, Au, Ag  
(Leased by Strawacker & Hartnett  
Idle

**JUDGE HYDRAULIC MINE**

Sawyers Bar  
PLACER, Kiskipou Co, Au  
Idle

**JUNIPER MINE**

Box 78, Baker  
Owner: Jerry Kortist

**KAISER ALUMINUM & CHEM CORP**

Kaiser Bldg, Oakland 13  
Pres: Henry J Kaiser  
VP: D A Rhoades  
Sec: Wm Marks  
Treas: Donald Brown  
Purch Agt: Duncan Gregg  
Mgr: Chem Div: F M Cashin  
Genl: E A Haines  
NATIVIDAD PLANT  
Box 1572, Salinas  
Works Mgr: J P Knight  
Gen Supt: D M Kerr  
Asst Gen Supt: Wm Burns  
Plant Supt: Ivan Hall  
Mech Eng: J E Winter  
HEAVY-MED MILL, Natividad

**KAISER STEEL CORP**

1024 Broadway, Oakland 13  
Pres: Henry J Kaiser  
Exec VP: E E Trefethen, Jr  
VP & Gen Mgr: Jack L Ashby  
VP, Oper: G D McMeans  
Mgr, Mag & Raw Materials:  
R G Heers  
Supt, Raw Materials: K B Powell  
Works Mgr: B W Dagna  
Purch Agt: G W Kelly (Oakland)  
D B Kuchel (Fontana)

**EAGLE MOUNTAIN MINE**

Box 150, Eagle Mountain  
Mgr: J G Hansen  
Asst Mgr: P W Leitich  
Mine Foreman: W A Horton  
Mine Eng: E B Hall, Jr  
5,000-TON HEAVY-MED MILL, at  
mine, magnetic sep  
Gen Mill Foreman: R B Brackin  
Asst Mill Foreman: C W Reno  
1,314,000-TON BLAST FURNACE,  
Fontana  
Asst Gen Supt (Iron & Steel):  
C R Lohrey  
Furnace Supt: J D Saussanen

**KEANE EXTENSION MNG CO**

Box 234, Beatty, Nev  
Owners: Michael & James Harris  
MINE, Death Valley, Inyo Co,  
undergr, Au, Pb, Fe, Ag  
SMELTER, lead & iron  
Under devel

**KELLY, T C**

Hayfork  
KELLY MINE, 5 mi NE of Hayfork,  
undergr, Au, Ag  
Under devel

**KENNEDY MINERALS CO, INC**

2952 E Olympic Blvd, Los  
Angeles 33  
ECLIPSE, WARM SPRINGS, KATZ,  
Los Angeles Co  
TALC AND DEATH VALLEY,  
Inyo Co  
CLAY MT, Inyo Co, clay

**KERGON CLAIMS**

c/o Jack Kerns, 316 Hayler Ave,  
South Taft  
KERGON #11-16, Miracle Hot  
Springs area, near Bakersfield,  
UO<sub>3</sub>  
Under devel

**KEYSTONE COPPER CORP**

Box 7, Nevada City  
MINE, Nevada City, Au, Ag  
Idle

**KEYSTONE MINE**

Agent: H G O'HANLON for  
Martin Ave, Sutter Creek  
KEYSTONE LOOK, Mother Lode  
dist, Au, Ag, Cu

**KIMBROUGH, R C & WILLIE A**

8004 Compton Ave, Los Angeles 2  
SUNRISE #1, #2, #3 & LUCKY  
HILL CLAIMS #1, #2, #3, #4,  
Oro Grande mng dist, San Bernardino  
Co, Au, Ag, Se, Pt  
Under devel

**KING & HOFFMAN**

Box 583, Big Bear Lake  
LUCKY 13 GP, 8 mi NE of Oro  
Grande, undergr, Au  
Idle

**KING SOLOMON LEASE**

c/o E B Atkinson, Box 161  
Johnsburg  
YELLOW ASTER MINE, Kern Co,  
undergr, Au, Ag  
MILL, Randburg dist

**KIRBY, CLYDE & THOMAIN, GENE**

Sawyers Bar  
THOMAIN MINE, Salmon Riv dist,  
placer, Au, Ag  
Idle

**KIRKPATRICK MINES CO**

390 Munroe St, Sacramento  
Pres: Chas G Johnson  
Gen Mgr: G W Johnson  
Sec: E C Royer  
Gen Supt: M Svetlich  
KIRKPATRICK NO 2 MINE, 6 mi  
S of Downsville, undergr, Au, Ag  
Prod: 10 tons  
Under devel

**KIRTCING, R E**

Box 753, Big Pine  
CRATER GROUP, Inyo Co, S

**KLAU MINE, INC**

1100 Mills Tower, San Francisco 4  
Pres: Malcolm B Gould  
Sec-Treas: D A Gould  
VIRGILIA & STANDART MINES,  
Plumas Co, Au  
Idle

**KLAU MINE, San Luis Obispo Co, Hg**

Idle  
(See H W Gould & Co

**KNEPPER, L W**

Idria  
NORTH STAR MINE, San Benito Co,  
surface, Hg

**KNOXVILLE MINE**

Monticello  
Owner: G E Gamble & W V Wilson  
MINE, Monticello, Hg  
FURNACE  
Supt: R Adams

**KOEST, GEO W**

Box 85, Darwin  
ALLIANCE & SILVER DOLLAR  
MINE, Inyo Co, talc

**KORFIST, JERRY**

Box 75, Baker  
ORE FINE MINE, 12 mi E of Baker,  
undergr, open cut, Au, Ag  
Under devel  
MINE, 33 mi NE of Baker, undergr,  
fluorspar  
Under devel

**KRETA, JOHN M**

Box 251, Randeburg  
BIG GOLD AND TUNGSTEN,  
Kern Co, WO<sub>3</sub>

**KUBON & JURVA**

419 N Emily, Anaheim  
RAND MINE, Kern Co, Gleeville,  
WO<sub>3</sub>  
Idle

**KUNDEL, J H**

Box 5, Tona  
GOLD TREASURE LODE, South  
Park dist, Au, Ag

**LA GRANGE GOLD DREDGE**

1805 Mills Tower, San Francisco 4  
Pres: Henry Eickhoff, Jr  
Sec-Treas: Jefferson Koolittle  
PLACER, La Grange, dragline, Au  
Pt, Ir  
Idle

**LAKE COUNTY MINERALS, INC**

2321 Waverly St, Oakland  
MINE, Kelseyville, Lake Co, S  
Idle

**LARIOS, JOE P**

Box 76, New Idria  
SAMSON PEAK MINE, San Benito  
Co, Hg

**LAWRENCE, RAY**

Lone Pine  
URANIUM CLAIMS  
Open Pit devel

**LIDICOAT GOLD MINES CO**

Rt A, Box 27, Greenwood  
Pres: J L Liddicoat  
VP: L G McClain  
Sec: Lillie Liddicoat  
GRIT MINE, undergr, Au  
Engr: J P Siegfried  
50-TON GRAY FLOT MILL

**LIGHT HOUSE M & M CORP**

Box 306, Barstow  
MINE, San Bernardino Co, WO<sub>3</sub>  
Idle

**LILA KING MNG CO, THE**

817 S Olive St, Los Angeles 14,  
Pres: Philip M King, Sr  
VP: Philip M King, Jr  
Sec-Purch Agt: Donald B MacAfee  
Tech Dir: M W MacAfee  
MINE, 5 mi SE of Randburg, open  
pit, WO<sub>3</sub>, Au  
Gen Mgr: R D MacAfee  
Met: Philip Hoffman  
Prod: 1,000 tons  
1,000-TON GRAY MILL  
Asst Mill Supt: Philip Hoffman  
Assay: Walter Olise

**LINCOLN CLAY PROD CO INC**

Box 267, Lincoln  
Pres: M J Dillman, Jr  
VP: K S Brown  
Gen Mgr & Purch Agt: A S Gulliford

**LIPINCOTT LEAD MINES**

Box 1811, Santa Ana  
Owner: George Lipincott  
LEAD KING MINES, Death Valley,  
Ag, Pb, Zn  
Prod: 50 tons  
Supt: Gene Taylor  
25-TON GRAY FLOT MILL, farnare  
Supt: Neuman Diek  
SMELTER, Bonnie Clare, Nev

**LIVE OAK MINES, INC**

Rt 4, Box 288A, Saugus  
Pres & Gen Mgr: Chalon Thompson  
VP: H C Ellis  
MINE, open pit, limonite, magnetite,  
Zr  
Met: Samuel Sklarew  
Under devel  
ELEC MAGNET MILL, at mine

**LUNDY, COL C A**

Blairides  
JAMISON GROUP LODE,  
Johnsville dist, Au, Ag  
Idle

**LUNIM CO**

Box 582, Auburn  
Owner: W B Shepherd  
Gen Mgr: Jack Hoppe  
Sec: W M Wilson  
WHITE ANGEL GP, 24 mi N of  
Monticello, undergr, Cr  
Prod: 8 tons  
30-TON GRAY MILL, Box 92,  
Monticello

**MARTER MINING CO**

143 N Rosemont Blvd, San Gabriel  
Pres: L B Martin  
Gen Mgr: R M Richter  
MARTER-WHITE MINE, San  
Bernardino Co, surface  
Prod: 200 tons  
LUCERNITE MINE, San Bernardino  
Co, Mn, WO<sub>3</sub>  
Prod: 100 tons

**MARTIN & KREBS**

145 W Hillcrest, Monrovia  
MINE, Tulare Co, WO<sub>3</sub>  
Idle

**MATTHEWS, PEARCE & UNDERWOOD**

Hullbater  
ANTELOPE MINE, 33 mi SE of  
Hollister, undergr, Cu  
Idle

**McCLENDON, C H**

Box 61, Crescent City  
BUCKEID-FOURTH OF JULY  
MINE, Cr

**McCULLEY, JOE**

Box 53, Darwin  
EMPIRE MINE, 5 mi E of  
Darwin, undergr, Ag, Pb, Zn, Cu  
Prod: 30 tons  
50-TON GRAY MILL, 7 mi E of  
Darwin  
Mill Supt: Great Crow

**MILLER, GEORGE & JOHN**

Box 481, Searsville  
GOLDEN STAR LODE, E Hill  
dist, Au



## MILLER &amp; WARREN

Less Pine  
Gen Supt: Louis Warren, Jr.  
East: E. L. Davis  
BURHAM & FREEMAN MINES  
Burwin, 3 mi SE of Darwin,  
undergr., WO<sub>3</sub>  
Mine Supt: Mack Tilley  
500-TON GRAY MILL, 4 mi E of  
Darwin  
Min Foreman: J W McCally

## MINERAL MATERIALS CO

245 Westcenter Ave., Alhambra  
Partners: A S Vinnell & Clair W  
Dunkin

See: B Vincent

Deol: M W Redmond

Gen Supt: R J Hill

ATLAS SILICA MINE, 2 mi E of

Cro Granada, surface, silica

Prods: 750-1,000 tons

VULCAN IRON MINE, Kelso, Pa

Prods: 1,500 tons

SILVER LAKE IRON MINE, Box 84,

Bakers, 20 mi N of Baker, surface,

Fe

Under devel

Prods: 150 tons

VECTOR PYROPHYLLITE MINE,

Near Hutchinson Co, Ia

(See Nevada)

## MIRACLE MNG CO

(See Wyoming Gulf Sulphur Co)

## MOBLEY, SAM

Oakhurst

URANIUM CLAIMS, Madras Co

Under devel

## MORAWA MINES, INC

Nipton

Pres: Loy Bartholomew

VP: Emerson A Ray

Sec & Gen Mgr: S C Greenwood

Treas: R N Day

IRON MINE, 45 mi S of Las

Vegas, undergr., Pb, Ag

Illa

## MOLYBDENUM CORP OF

AMERICA

Nipton

Gen Mgr: H D Bailey

Asst Gen Mgr: Russell Wood

Metals: R S Woodward

MT PASS MINE, 60 mi SW of

Las Vegas, Nev, open pit, rare

earth metals

Prods: 180 tons

Mine Supt: John Martin

150-TON FLOT MILL

MILL Supt: G N Lee

Assay: John Carr

(See Colo, Nev Mex, NV, Penn)

## MOONLIGHT MINING CO

Coolererville

MINE, Marietta Co, undergr., Au

## MOONLIGHT MINES OREGON

LTD

W M Smith, R E Powell &

P C Foster, 15 E St,

No Lakeview, Ore

MOONLIGHT GROUP LODGE, IN

Grade dist, Modoc Co, Au, Ag

## MORRIS RAVINE MNG CO

Box 7, Oroville

Pres & Gen Mgr: J H Sharpe

VP: Roy A Hundley

Sec: J B Peterson

MINE, 9 mi NE of Oroville,

undergr., Au

## MOUNTAIN COPPER CO,

LTD

230 Calif St, San Francisco 11

Sales Mgr: M M Stockman

Purch Agt: S D Dodo

IRON MINE, Madras,

Indiana Co

Gen Mgr: L T Kott

Mine Supt: G W McCune

Mine Foreman: H Calhoun

Mine Engineer: R K Barnes

undergr., iron pyrites

Prods: 400 tons per shift

MATER CRUSHING PL

Prods: 400 tons per shift

## MT DIABLO MINE

Centra Costa Co

MINE, Ag

Illa

## MT GAINES MINING CO

MOORE

50-TON ANAL FLOT MILL, Au,

Ag

Mgr: J L Dymas  
Mine Foreman: A J Meagher  
Mill Foreman: C S Guest  
Assay: T W Molten  
Illa

## MT SHASTA ASBESTOS CO

MT Shasta

EDDY CREEK MINE, Shasta Co

Asbestos

Illa

## MT VIEW LEAD MINE

Independence

Mgr: Pritchett & Slater

MINE, Inyo Co, Ag, Pb

## MULTI MINES, INC

2550 E Olympic Blvd, Los

Angeles 23

MINE, Los Angeles Co, talc

## NAT'L LEAD CO, BAROID

DIV

2-04 Danville, Houston, Texas

NECTOR MINE & PLANT,

Newberry, undergr., bauxite

Supt: Jack Harford

MERCED MINE, Merced, dry

grinding of barytes

Supt: Les Bunch

(See Ark, Kans, Mo, Nev, Tex)

## NATOMAS COMPANY

607 Forum Bldg, Sacramento

Pres & Gen Mgr: R G Smith

VP: Louis Sutter

Sec: Wade Durkee

Asst Gen Mgr: Cyril Thomas

Gen Supt: Calvin Sears

PLACER MINE, 20 mi E of

Sacramento, Au

Prods: 55,000 cu yds

(See Colo, Nev)

## NELSON MINE

Box 124, Eureka

Opr: Dayton Murray

PLACER MINE, 6 mi N of

Oreana, Ag

Illa

## NEW CHAMPION MINING CO

West Point

CENTENNIAL MINE, undergr., Au,

Ag, Pb

Supt: H G O'Hanlon, Jr

Foreman: Dean Aggett

FLOT MILL

Supt: N O'Hanlon

Illa

## NEW IDRIA MNG &amp; CHEM CO

Idria

Pres: Charles F Parker, Jr

VP & Gen Mgr: C Hyde Lewis

Sec-Treas: Austin F Ventres

Gen Supt: Wesley Shaddock

Geol: Richard Peterson

Purch Agt: Richard Daly

NEW IDRIA QUICKSILVER MINE,

undergr., Ag

Prods: 150 tons

Mine Foreman: Victor Solis

400-TON MILL

4 ROTARY MILLS

## NEW PENN MINES, INC

Camp Secs

Pres: R F Playter

Sec: J H Nicholls

Gen Supt: W F Criswell

PENN MINE, 1 mi W of Camp

Secs, Ca, Zn, Ag, Pb, Au

Under devel

200-TON FLOT MILL

## NICHOLS MINE

c/o C G Scharf, 524 N Main St,

Bishop

WO<sub>3</sub>

## NORTHWESTERN MINING CO

Box 321, Seattle, Wash

Owner: Alfred W Foster

BOULDER GULCH GROUP, Siskiyou

Co

HYDRAULIC PLACER, Snyders Bar,

Au

Supt: Richard T Reed

Illa

## NEW WORLD EXPLOR.

RESEARCH & DEVEL CORP

6547 Agueduct Ave, Van Nuys

ALLEN MINE, Bodfish, 5 mi S

of Bodfish, undergr., UO<sub>2</sub>

Under devel

(See Colo, Utah)

## ONTOP MINE

Meadow Valley, via Quincy

Owner: H E Fowler  
MINE, 3 1/2 mi S of Bucks Lake,  
undergr., Au, Ag  
Under devel

## ORO PINO CONS MINES CO

Box 422, Auburn

Pres: G A Nugent

Treas: J C Komprance

ORO PINO MINE, 4 mi from

Auburn, undergr., Au, Ag

Illa

## ORIGINAL 10 TO 1 MINE, INC

1611 Russ Bldg, San Francisco 4

Pres: A H Lewis

Sec: Jack Marfield

Gen Supt: C A Bennett

MINE, Allegheny, Au, Ag

Foreman: W V Van Doran

150-TON CONC & AMAL PLANT

Mill Foreman: J B Hunley

## OWL SPRINGS CO

1079 Leighton Ave, Los Angeles 37

Pres: Harold W Orwig

Sec: George Orwin

BAJANANESE MINES, San Bernardino

Co, undergr., surface, Mn

Assay: Edward Eisenhaor, Jr

50-TON CONC & SINTERING PL

Illa

## PACIFIC CLAY PRODUCTS

CO

Box 2178, Term Annex, Los

Angeles

Pres & Gen Mgr: J D Fredericks

Exec VP: Kenneth Barreite

VP: M C Brown

Sec: J C Culhane

Purch Agt: R M DePrey

PTS, Amador, Calaveras, Orange,

Riverside & San Joaquin Counties,

clay

## PACIFIC COAST

AGGREGATES

400 Alabama St, San Francisco

ROCKFIELD GRAVEL PLANT,

Prinit dist, Au, Ag, sand and

gravel

## PACIFIC COAST BORAX CO,

DIV BORAX CONSOL, LTD

830 Shatto Place, Los Angeles 5

Pres: J M Gerstley

VP: P J O'Brien

Purch Agt: J C Walker

BORON MINE, undergr., borate ores

Gen Supt: W J Diffley

Safety Eng: L F Clegg

Mine Supt: W H Wansley

Asst Mine Supt: P A Conte

Foreman: F M Smith

Eng: G T Osen

BORON MILL

Mill Supt: E D Lemon

Asst Supt: O G Vagy

## PACIFIC MINERALS CO,

LTD

327-10th St, Richmond

Pres: C L Reswick, Jr

Sec: T H DeLap

PLACERVILLE & SHINGLE

SPRING MINES, asphalt, coapatone,

slate roofing granules

Mine Supt: G B Bishop

MILL

Supt: Ed Bishop

## PALO ALTO MNG CORP

521 San Tomas Rd, Campbell

Pres: F H Smith

VP: S S Ridgely, Sr

Gen Mgr: G E Carlson

Sec: K E Dixon

MINES, Santa Clara & Alameda

Co, surface, Cr

Mine Supt: S S Ridgely, Sr

Prods: 100 tons

50-TON GRAY MILL, 5 mi S

of San Jose Coyote Rd

Mill Supt: G E Carlson

## PANOCHE VALLEY

QUICKSILVER MINES

Box 21, Painton

LOVE OAK & VALLEY VIEW

MINES, San Benito Co, Hg

Illa

## PARKER MNG &amp; MFG CO

Box 202, Barstow

Pres: P A Parker

VP: J C Porter

Sec-Treas: H T Parker

Geol: Eugene Lawrence

Eng: Wade Whaley

WHITE DOLLAR MINE, 14 mi S

of Daggett, surface, do-er,



PROVIDENCE MINE, 1 1/2 mi SE of Sonoma, undergr. Au

BLUFF MINE, Humboldt Co., Cu  
Under devel  
150-TON MILL, Teulimue

#### QUARTZ HILL MNG CO., INC

Scott Bar  
Pres: L. J. Cusack  
VP: C. Garbino  
Gen Mgr: R. B. McGinnis  
Sec: J. L. Seigman, Jr.  
QUARTZ HILL MINE, surface  
Idle  
500-TON GRAY MILL  
Supt: E. M. Smith  
Idle

QUINONEZ, J  
235 2nd St, Hollister  
EL REY MINE, San Benito Co., Hg

RED STAR  
Pres: P. G. Cox, 17 Hayden,  
Healdsburg  
CRYSTAL MINE, 10 mi NE of  
Healdsburg, undergr. Hg  
Under devel  
Mine Supt: P. G. Cox  
Under devel

REUSS, R. F.  
Box 72, Smith River  
PAYDAY MINE, Del Norte Co.,  
1 1/2 mi SE of O'Brien, Ore.,  
surface, Cr

RINCONADA QUICKSILVER  
MINE  
Star Wd, Box 37A, Santa  
Margarita  
Owners: G. P. Bell  
RINCONADA MINE, 13 mi E of  
Santa Margarita, Hg

RIVER ROCK INC  
Mgr: B. M. DeLa  
GRAVEL PIT, Merced Co

ROADS END MINES GP  
Big Bar  
Pres & Gen Mgr: H. L. Moore  
VP: Grover C. Seburn  
Sec: G. C. Ritchie  
ROADS END #1, open pit, Mn, Cu,  
Ag, Pb, Zn, Ti  
Gen Supt: Ernest F. Meier  
Prod: 200 tons  
CUSTOM MILL

RYBERS, F. E.  
Coulterville  
CAL-PENN-TEN GP, Mother  
Lode dist, Mariposa Co., Au, Ag

SALMON RIVER MINES CO  
Callahan  
Pres & Gen Mgr: E. C. Latham  
Purch Agt: V. W. Peterson  
TRAIL CREEK MINE, Au  
50-TON FLOT MILL  
Under devel

SAN GABRIEL VALLEY  
PLACERS  
1237 S. Greenwood Ave, Montebello  
Owners: Robert A. Riggs  
MINE, 3 mi S of Arroyo, placer, Au,  
Ag  
GRAY MILL

SCHWELITE MINING CO  
Box 29, Big Pine  
WO<sub>3</sub>  
Idle

SCHROEDER MINES  
Box 160, Mariposa  
MINE, 12 mi N of Mariposa,  
undergr. Au  
20-TON MILL

SCHULTZ, FRANCIS W.  
Box 438, Greenville  
COMERACK MINE, 9 mi W of  
Greenville, placer, Au  
Under devel

SCHWOBBER, LOWELL F.  
Box 438, Vallejo  
RED HILL MINE, Mother Lode  
dist. Au, Ag

SCIOCHETTI, LOUIS  
Box 697, Hollister  
JUNIPER MINE, San Benito Co., Hg

SCOTT, J. B. CO  
Merchants Bldg, San  
Francisco

WASHINGTON MINE, French Gulch,  
Au  
Idle

SHADOW MT MINES  
c/o Paul McHenry, Nipion  
MINE, San Bernardino Co., Ag, Pb  
Idle

SHERMAN PEAK MNG CO  
Box 583, Kernville  
SHERMAN PEAK & HILLTOP  
MINES, Tulare Co., undergr.,  
surface, WO<sub>3</sub>  
50-TON GRAY MILL  
Idle

SHOOTING STAR TUNGSTEN  
MINE  
1124 W. 2nd St, San Bernardino  
MINE, undergr. WO<sub>3</sub>, Ag, Au  
Idle

SIERRA TALC & CLAY CO  
3409 Randolph St, Los Angeles 33  
MINES, Keeler, Tecopa & Inyo Co  
SHOSHONE MINES, c/o D. B.  
Kemper, Shoshone, undergr., tale  
TALC MINE, San Bernardino Co  
MINE, Saline Valley & Ubehebe  
dist  
150-TON TALC MILL, Los Angeles

SILICATES CORP  
250 Park Ave, New York City 17  
Pres: F. B. Vanderbilt  
Sec-Treas: F. C. Gens  
MINE, Inyo Co., bentonite

SISKON CORP  
Box 148, Happy Camp  
Gen Mgr: H. B. Chesser, Jr.  
MINE, open pit, Au, Ag  
100-TON CYAN MILL, at mine  
Mill Foreman: A. N. Wheelodon  
Assay: J. L. McFarland  
(See Nev)

SMELLING GOLD DREDGING  
Smelling  
DREDGE, Merced Co., Au, Ag  
Idle

SONOMA QUICKSILVER  
MINES  
340 Pine St, San Francisco  
Pres: H. D. Tudor  
Sec-Treas: E. R. Menary  
MT JACKSON-GREAT EASTERN  
MINE, 4 mi N of Gearyville,  
undergr. Hg  
150-TON GOULD FURNACE  
Supt: H. F. Larson  
Prod: 125 tons

SONORA MARBLE  
AGGREGATES CO  
356 Church St, San Francisco  
QUARRIES, Teulimue Co., Iluestone.

SOUTHERN CALIFORNIA  
MINERALS CO  
310 So Mission Rd, Los Angeles  
Owner: W. K. Bloech  
Geol: Charles F. Joy  
Purch Agt: Don Tash  
DEATH VALLEY AREA TALC  
MINES, Shoshone, tale  
Mine Supt: Ben Gomez  
75-TON AIR FLOT MILL,  
Los Angeles  
Mill Supt: Glen Hodges  
(See Mex, Utah)

SOUTHERN CROSS MINE  
Box 178, Columbia  
Gen Mgr: Charles M. Bryan  
Owners: Grant, Bryan & Foster  
MINE, 14 mi NW of Columbia,  
undergr. Au  
Idle

SPANISH MINE  
100 Palm Ave, San Rafael  
Owner: Louis R. Moretti  
MINE, Nevada Co., surface, baryte  
Under devel  
(See Indus Min & Chem Co)

SPAULDING, L. B.  
Box 15, Ramona  
METAL MT MINE, 20 mi NW of  
Jacumba, undergr. WO<sub>3</sub>  
Under devel  
2-TON GRAY MILL (Pilot Plant)

STRAWBERRY TUNGSTEN  
MINES, INC  
1738 Terrace Ave, Fresno 3  
Pres: A. J. Jesson  
VP: D. W. Haggerty  
Gen Mgr & Sec: P. L. Johnson  
Gen Supt: M. C. Richardson

Purch Agt: W. F. Bieser  
STRAWBERRY MINE, 35 mi N  
of Boss Lake, undergr. WO<sub>3</sub>  
Prod: 50 tons  
Mine Supt: M. C. Richardson  
100-TON GRAY-FLOT MILL

SULPHUR CORP OF  
AMERICA  
1448 E. Town & Country Lane,  
Phoenix, Ariz  
Pres & Gen Mgr: C. Shapley, Jr.  
VP: C. Shapley, Sr.  
MINE, CaP<sub>3</sub>  
Calcedon  
MILL, at mine

SULPHUR MNG & SUPPLY  
CO  
1891 East Glenoaks Blvd,  
Glendale  
MINE, Inyo Co., S  
Idle

SUN VALLEY TUNGSTEN CO  
11370 Pendleton St, Sun Valley  
CUSTOM MILL, Los Angeles Co.,  
WO<sub>3</sub>

SUNSET CHROME MINE  
Forest Hill  
Opr: C. L. Mathers  
MINE, Placer Co., Cr

SUNSET TUNGSTEN MINES  
158 S. Main St, Bishop  
WO<sub>3</sub>  
Idle

SURGEON MINING CO  
314 20th St, Sacramento  
Pres: J. W. Hoefling  
VP & Gen Mgr: K. Malone  
Asst Mgr & Purch Agt: D. A. Mayer  
Sec: J. B. Gee  
Geol: Dionne Gardner  
ATOLIA MINES, 3 mi SE of  
Randburg, undergr. surface &  
placer, WO<sub>3</sub>  
Mine Supt: J. D. Hoefling  
100-TON FLOT GRAY MILL  
Supt: R. C. Lipold  
Assay: Robert Harris

SWEENEY TUNGSTEN CO,  
LTD  
Box 183, Indio  
Gen Mgr: E. G. Sweeney  
Asst Mgr: Elmer Tubbs  
Gen Supt: Dale Ervin  
Geol: L. Cornejo  
PINTO BASIN LODE, Chuckawalla  
dist, Au, Ag, WO<sub>3</sub>  
RAINBOW MINE, 50 mi E of  
Indio, surface, scheelite, FeWO<sub>4</sub>,  
Au, Ag  
Under devel

SWEETSER, R. W.  
Box 445, Rosamond  
MINE, 4 mi NW of Rosamond,  
undergr., feldspar, silica  
Prod: 10 tons  
10-TON CRUSH PLANT, at mine

TEDOC MINING CO  
Platina  
MINES, 7 mi SW of Platina,  
surface, Cr

TEEKAY MINES, INC  
Box 243, Tracy  
Pres: E. R. Koop  
VP & Gen Mgr: A. V. Taylor, Jr.  
Purch Agt: J. A. Briggs  
Gen Supt: Hugh C. Ingle, Jr.  
Sec: A. V. Taylor, Jr.  
LADD MINE, 15 mi SW of Tracy,  
undergr. surface, MoO<sub>3</sub>  
Prod: 100 tons

Foreman: Rupert Mack  
MAGNETIC SEP-GRAY MILL  
Jefferson Rd, Tracy  
Mill Foreman: Leslie Mechling  
Assay: H. R. Kaiser

THOMAS, WALTER  
Box 100, Big Pine  
TIP TOP MINE, Inyo Co., WO<sub>3</sub>  
Idle

THUNDER MOUNTAIN  
MNG CO  
Orleans  
Pres & Mech Engr: D. F. McGraw  
Gen Mgr: Archie Campbell  
Metall: Edmund Phillips  
Elec Engr: Alex. Skimmon  
Sec: C. V. Shipley  
MINE, 10 mi N of Orleans,  
Humboldt Co., Au, Ag, Pb  
Under devel  
Mine Supt: Archie Campbell

50-TON FLOT-GRAY FLOT PL,  
Wilder River

THURMAN & WRIGHT  
429 Market St, San Francisco 5  
Partners: Charles H. Thurman &  
Allen J. Wright  
DREDGE OPER

TIGHTNER MINES CO  
Box 419, 38 Sutter St, San  
Francisco  
Pres: Robert E. McCulloch  
VP: Edwin L. Oliver, W. T. Jamies  
Sec: Carlo S. Morbio  
Treas: J. Malcom Vistal  
RED STAR GROUP, 1/2 mi N of  
Alhambra, undergr. Au, Ag  
Mine Supt: Charles J. Ayres  
50-TON GRAY MILL  
(Leased to Yellow Jacket Consol  
Gold Mines, Ltd)

TOTLAND BROS  
Box 3-1, Leavitt  
Gen Mgr: G. H. Totland  
BARBARA & W. G. NUGGETT MINES,  
13 mi NE of Leavitt, Au, Ag, Pb

TRI STATE MINERALS CO  
Shoshone  
(See Southern Calif Mag Co)

TULARE CO TUNGSTEN  
MINES  
685 Lafayette Ave, Lindsay  
Owners: Dominick F. Lavricola &  
Sal Natoli, Jr.  
W. G. JIM MINE, 18 mi NE of Lind-  
say, undergr. WO<sub>3</sub>  
Prod: 50 tons  
100-TON GRAY MILL, at mine

TUNGSTAR-HANGING  
VALLEY MNG CO  
Box 759, 9233 Hollywood Blvd  
Hollywood  
Pres: Gayle Green  
VP: Gen Ralph Cousins  
TUNGSTAR-HANGING VALLEY &  
BLACK ROCK MINES, undergr. WO<sub>3</sub>  
(Leased to Ajax Tungsten Corp)

TURTLE MOUNTAIN MNG CO  
P. O. Box 547, Earp  
Partners: A. O. Birch, Robert A.  
Landrum, R. G. Van Horn  
Gen Mgr: R. G. Van Horn  
Met: L. A. Cornejo  
Elec Engr: E. E. Clark, Jr.  
VIRGINIA MAY MINE, 10 mi W of  
Vidal Junction, undergr. Cu, Ag,  
Au  
Engr: L. A. Cornejo  
Idle  
NADMT LEASE, 9 mi W of Cross  
Roads, undergr. Mn  
Act Mine Foreman: Carl Habbitt  
Mine Engr: L. A. Cornejo  
75-TON MILL

TWINING LABORATORIES  
3337 Fresno St, Fresno  
Owner: Fred Twining  
FLOT, MAGNETIC SEPARATION,  
prod-scale assaying  
Met: Vernon Young

TYSON MNG CO  
Box 172, Smith River  
MT VIEW MINE, Del Norte Co.,  
Cr  
Idle

UBEHEBE LEAD MINES, INC  
316 So Spring St, Los Angeles 15  
Pres: Grant Snyder  
VP: E. S. Alexander  
Sec: Allen Rankin  
Gen Supt: Louis Hinds  
UBEHEBE MINE, Death Valley, 50  
mi NE of Keeler, undergr. Pb, Zn,  
Ag, Au  
Under devel

UNITED MERCURY  
PRODUCERS ASSOC  
15 Aliso Way, Menlo Park  
OLD ALMADEN PROP, Santa  
Clara Co., undergr. deposits, Hg

UNITED STATES GYPSUM CO  
300 W. Adams St, Chicago 5, Ill  
OPEN PIT MINE, Midland, gypsum  
Mgr: H. E. Hammer  
(See Colo, Mont, Mich, Nev,  
New Mex, Ohio, Tex, Utah)

U. S. LIME PRODUCTS CORP  
175 S. Alvarado St, Los Angeles 57  
Pres: W. O. Anderson

Exec VP & Gen Mgr: Kennedy  
 Res Mgr: Nevada; L N Orsdel  
 Res Mgr: Tushum Co, Calif  
 W A Sisson  
 Supt, Glens, Nev: W E Ellis  
 Supt, Apen, Nev: C B Prince  
 Supt, Henderson, Nev: W B Mainor  
 Supt, Nelson, Ariz: Roy Lauer  
 Purch Agt: E Benton Long  
 SONORA PLANT, Tushum Co,  
 undergr.  
 (See Ariz., Nev & New Mex)

**U S PUMICE SUPPLY CO., INC**

4331 Hollywood Blvd.,  
 Los Angeles 28  
 Pres: Sheldon P Fay  
 VP: L B Clark  
 Sec: Leone Kischewer  
 Treas: C F Stegmaier  
 LEE VINING MINE, Lee Vining,  
 surface, pumice stone  
 Mine Supt: D H Campbell  
 GLENS MTR MINE, Tushum,  
 surface, pumice stone  
 Mine Supt: Philip Park

**U S VANADIUM CO  
 A DIV OF UNION CARBIDE  
 & CARBON CORP**

Bishop  
 VP: A P Cortisou  
 Gen Mgr: H L McKinley  
 Gen Supt: A C Soda  
 Purch Agt: C A Smith  
 MINE DEER MINE, 11 mi NW of  
 Bishop, undergr, WO<sub>3</sub>, MoO<sub>3</sub>  
 Prod: 300 tons  
 Mine Supt: John F Emmons  
 Mine Engr: Lawson A Wright  
 Mine Foreman: W H Will  
 1,000-TON FLOT MILL  
 Mill Supt: L E House  
 (See Colo, NY)

**UTAH CONSTR CO  
 (MINE OPERATORS & CONTR)**

1 Montgomery St, San Francisco  
 VALLEY VIEW MINES CO  
 513 Atlas Bldg, Salt Lake City,  
 Utah

Pres: Louis W Cramer  
 Sec-Treas: A M Borch  
 Gen Supt: Page Blahomert, Jr  
 CHEMUNO, SARITA MINES, 8 mi  
 NE of Bridgeport, undergr,  
 surface, Au, Ag  
 50-TON CYANIDE MILL

**VERDI DEVEL CO**

2823 Hyperion, Los Angeles 27  
 Pres & Treas: Clifford Gillespie  
 VP & Sec: Jesse M Ashby  
 Asst Treas: Chas E Isaley  
 RICHMOND URANIUM MINES  
 Richmond  
 Gen Mgr: Jesse M Ashby  
 Geol: A B Meiklejohn  
 Conc Engr: Frank B Wick  
 Mine Engr: Thomas C Hedford  
 Under devel

**VICTORVILLE LINE ROCK CO**

Box 348, Victorville  
 Pres: L E Ayers  
 VICTOR QUARRY, open pit, lime-  
 stone  
 Gen Mgr: E A Piercy  
 Gen Supt: W M Peterson  
 Quarry Foreman: Emil Doty  
 FINE GRIND MILL  
 Mill Foreman: Harold Humble

**VICTORY MINERALS, INC**

Victorville  
 Pres: G R Seals  
 VP: Thomas Knight  
 Sec-Treas: Wm Johnstone  
 Engr: Douglas Christensen  
 BLUE HUGGETT MINE, 23 mi N  
 of Victorville, undergr, Cu  
 GREY EAGLE GROUP, Pb, Ag,  
 limestone

**VOLO MINING CO**

46 Main St, Placerville  
 Pres: F V Phillips  
 SHAW MINE, El Dorado Co,  
 Au, Ag

**W M C MINING CO**

P O Box 260, Green Valley  
 Pres: Laurence J Mader  
 VP: Margaret Webb  
 Gen Mgr: Kenneth Crowder  
 SUMMIT MINE, 1 mi NE of  
 Green Valley, undergr, Au, Ag  
 Mine Supt: L Mader  
 Asst Mgr: K Crowder

**Under devel  
 48-TON FLOT MILL  
 BETORY SMELTER**

**WAGER, C E**

c/o Hinchow State, Chico  
 KELLY HILL PLACER, Butte  
 Creek, Au, Ag

**WAN CHANG MNG CORP**

137 Clarke St, Bishop  
 Gen Mgr: J J Strussel, Jr  
 Asst Gen Mgr: Gen Reed  
 Purch Agt: Wm F Spain  
 Geol: Byron W Works  
 Mech Engr: Bob Stewart  
 Met: Phil McGuire  
 Mine Supt: Bob Holmes  
 BLACK ROCK MINE, MENTON  
 DIV, undergr, WO<sub>3</sub>  
 Prod: 400 tons  
 HEAVY-FLOT MILL  
 Mill Supt: Bob Baker  
 (See Colo, Nev)

**WALKER MINING CO**

Box 120, Taylorville  
 Pres: Ray B Wiser  
 VP & Gen Mgr: Alden H Hughes  
 Sec: Edson Kille  
 MINE, 29 mi N of Taylorville,  
 undergr, Au, Cu, Ag  
 Under devel

**WALKER CORP**

103 East Ely, Nev  
 Pres: R T Walker  
 VP: W J Walker  
 Sec: B T Walker  
 SHASTA KING MINE, 15 mi NW  
 of Redding, Cu, Zn  
 Idle  
 (See Silver Star-Quonzo Mine, Inc,  
 Idaho)

**WARNKEN, LOUIS JR**

Box 27, Lane Pine  
 DURHAM, ST CHARLES, FERNANDO  
 & ALAMEDA GROUP, Inyo Co, WO<sub>3</sub>

**WEBB, DAVID L**

O'Brien, Oregon  
 WEBB MINE, Del Norte Co, Mg

**WEBB, TED**

O'Brien, Oregon  
 DIPPER MINE, Del Norte Co, Cr

**WEGMAN, MARGARET**

P O Box 105, Randsburg  
 WEGMAN GROUP LODGE, Mojave  
 dist, Kern Co, Ag, Au, Pb

**WEST COAST CHROME**

PRODUCERS  
 Box 124 Coolings  
 Owners: Jack James &  
 Chaves Thickett  
 Oper: J R Holman  
 MINE, 28 mi NW of Coolings

**WESTERN BARIUM CORP**

Russ Bldg, San Francisco  
 MINE, Mariposa Co, barite

**WESTERN DEVEL CO**

120 S Beverly Dr, Beverly Hills  
 Partners: R E Hall & Maurice  
 Willows, Jr  
 MINE, 18 1/2 mi NW of Blythe,  
 open pit  
 Idle

**WESTERN GOLD, INC**

Rm 537, 63 Post St, San  
 Francisco

Pres: W H Taylor  
 Gen Mgr: T H Taylor  
 RELAY HILL MINE, Nevada Co,  
 hydraulic, Au  
 Idle

**WESTERN REFRACATORIES**

CO  
 Box 109, Ione  
 Pres: A C Gladding  
 VP: A L Gladding  
 Gen Mgr & Sec: O M Tupper, Sr  
 Gen Supt: N W Rasley

**WESTERN PHOSPHATES,**

INC  
 428 California St, San Francisco  
 Pres: Hann Brachler  
 (See Utah)

**WESTERN TALC CO**

1901 E Blawie Ave, Los Angeles  
 Pres & Gen Mgr: P H Savell  
 VP: Malcolm Stewart  
 Sec: J V Evers  
 WESTERN TALC MINE, 14 mi SE  
 of Teacup, undergr, talc

**Mine Supt: Marcus Seger**

BILL  
 Supt, Los Angeles: P C Frey  
 Supt, Dunn: A T Krebs

**WHISKY HILL MINE**

Whiskey Town  
 MINE, Shasta Co, undergr, Au

**WHITE & RAY**

Box 5, Orleans  
 PEARCH MINE, Humboldt Co,  
 placer  
 Idle

**WHITE MT TALC CO**

Box 448, Lane Pine  
 Gen Mgr: Wm Bonham  
 WHITE MT, FLORENCE, ALBERTA  
 TRINITY MINES, 4 mi N of Cerro  
 Gordo, undergr, talc

**WHITESPOT MNG CORP**

121 August St, Inglewood  
 Pres & Gen Mgr: Samuel Hughes  
 Treas: Mel Lloyd  
 Purch Agt: J C Loken  
 WHITESPOT MINE, placer  
 Under devel  
 50-TON GRAY MILL  
 Twenty-nine Palms

**WICKIEUP MNG CO**

38702 Sunset, Palmdale  
 Pres & Gen Mgr: Stephen Meirger  
 Sec-Purch Agt: Robert Nelson  
 Gen Supt: Richard Crook  
 Asst Mine Supt: Ted Robertson  
 BIG BLUE, YELLOWJACKET,  
 BLACKROCK #1, 2, 3, RED DEVIL  
 MINES, Los Angeles Co, Hg,  
 torbernite, Au, Mn  
 Prod: 25-35 tons  
 50-TON GRAY-FLOT MILL  
 Baker

Mill Supt: Richard Crook

BLAST FURN

Mohave

**WILLOW VALLEY MINES,**

INC

441 Market St, San Francisco  
 Pres: Fred Gileno  
 VP: Joe Navone  
 Sec: Geo Pettigrew  
 MINE, Nevada City, Va, Ag, WO<sub>3</sub>  
 Gen Mgr: Lee G McCoy  
 Gen Supt: E O Berger  
 Geol: Jack Siegfried  
 Prod: 75 tons  
 75-TON FLOT MILL, at mine  
 Mill Supt: E O Berger  
 Asst Supt: E Hiller

**WIND WHEEL MINE**

Box 151, Columbia  
 Owner: R O Greaves  
 MINE, undergr, Au, Ag  
 Under devel  
 GRAY MILL

**WYOMING GULF SULPHUR**

CO

Cody, Wyo  
 MIRACLE MNG CO PROP, near  
 Bakersfield, UO<sub>3</sub>  
 Prod

**YELLOW JACKET CONS**

GOLD MINES  
 120 Chester Ave, Bakersfield  
 Pres: Clifford Dickhut  
 VP: A F Bullard  
 Sec: James Ebert  
 Gen Supt: C J Ayres  
 Geol: B C Austin  
 MINES, Allamogony, undergr, Au, Ag  
 Prod: 15 tons

**YUBA CONS GOLD FIELDS**

201 California St, San Francisco  
 Pres: M G Bolster  
 VP: P C Van Deone  
 Gen Mgr: E J Gorman  
 Sec-Treas: O W Smith  
 Geol: Leslie Gassaway  
 PLACER MINES, 10 mi NE of  
 Marysville, 97 dredges on Yuba Riv  
 Res Supt: Cecil Brophy  
 Gen Field Mgr: C V Deaver

**YUKON TUNGSTEN MNG CO**

Box 20, Dunlap  
 Pres & Gen Mgr: R W Barge  
 TRAWERS MINE, W W  
 Mgr: S H Strickland  
 20-TON MILL  
 Idle

**COLORADO**

**ACME MNG CO**

993 Mills Bldg, San Francisco  
 Calif

Pres: Harry Johns  
 Sec: Paul W Schwarz  
 CARBONATE QUEEN MINE  
 Teller Co, Au  
 Gen Mgr: Rymers Gallagher  
 TAIT OP, claims, UO<sub>3</sub>  
 Explos

**ADOLPH POSTON MNG CO**

Box 510, Canon City  
 COTOPAXI MINE, Fremont Co  
 Zn, Pb, Cu, Ag

**AJAX BASE METALS, INC**

8 Howard-Casfield Bldg,  
 Santa Barbara, Calif  
 Pres: L E Dresbach  
 Gen Mgr & Engr: Glenville Colman  
 Sec: Don Dalzell  
 MORO AJAX & EMPIRE GROUPS,  
 Lake City, 10 mi W of Lake City,  
 undergr, Pb, Zn  
 Under devel

**AJAX URANIUM CORP**

1134 Bannock St, Denver  
 Pres: T J Weaver  
 VP: Catherine Walsh Weaver  
 Sec-Treas: Mark S Wagener  
 73 CLAIMS, San Miguel Co, UO<sub>3</sub>  
 Geol: T J Weaver  
 Under devel

**AJAX MNG & OIL CO**

Box 1075, Grand Junction  
 Pres: R F Gilmore  
 Sec-Treas: J R Cagle  
 AJAX & LUCKY DAY CAVE MINES,  
 6 mi SW of Gateway, undergr, U, V  
 (Leased to Climax Uranium Co)

**ALEXANDER LEASE**

Box 32, Ouray  
 Ogr: Earl A Alexander  
 LOST DAY-PATSY MINE, Ouray Co,  
 Zn, Pb, Ag

**ALLIED CHEM & DYE CORP,**

GEN CHEM DIV  
 Box 228, Boulder  
 Mgr, Mng Oper: Robert H Dickson  
 Asst Mgr, Mng Oper: Wilbert J  
 Treas

**JAMESTOWN MINES, 20 mi NW**

of Boulder, undergr, CuP<sub>3</sub>  
 Prod: 100 tons  
 Supt: A W McGowan  
 Asst Supt: James R Pennington  
 Mine Foreman: William Popt  
 100-TON MILL  
 Mill Foreman: A W McGowan  
 Mill Foreman: T J Hinchaw  
 (See New Mex, Mo, NY, Va)

**ALAMONT MNG CO**

50 E 10th St, Bountiful, Utah  
 Gen Mgr: Geo Schult  
 MINE, near Gunnison, UO<sub>3</sub>  
 Under devel  
 (See Nev, Utah)

**AMCO MNG CO**

217 Main, Grand Junction  
 Partners: Frank L Seymour &  
 Georgia Wright  
 LITTLE JOHNNIE MINE, 8 mi  
 S of Gateway, undergr, UO<sub>3</sub>

**AMERICAN SMELTING &**

**REFINING CO**

507 First Nat'l Bank Bldg,  
 Denver 2

Mgr: J Paul Harrison

ARKANSAS VALLEY PLANT, Pb

Box 573, Leadville

Supt: T P Fahy

Asst Supt: K D Loughridge

Metallurgists: M D Reed, L C

Travis, R Enos, F A

De Seattle, G Cochran

Master Mech: C Hopfinger

Chief Clerk: Edward J Kelly

Safety Engr: Frank Stevens

Plant Engr: R L Armbruster

Ch Asst: R J Elliott

Ch Chem: Max Keaton

GLOBE PLANT, Denver, Cd

Supt: W L Miles, Jr

Asst Supt: Max Caste

Metals: C F Baker, Jr

**Safety Insp:** J J Ryan  
**LEADVILLE MNG DEPT**  
 Mine Supt: A Bessler  
 Asst Mine Supt: R S Burton  
 Mine Engr: Howard Bloomfield  
 Mine Foreman: Andy O'Kora  
 Mine Elec: Jack Kendrick  
**IBEX-SUNDAY, ECLIPSE-IRENE,**  
**FRYER HILL & ROBERT EMMETT**  
**OPNS, Zn, Pb, Au, Ag**  
 (See Ariz., Calif., Ida, Kans., Md.,  
 Mont, Neb., N. J., New Mex., N. Y.,  
 Tex., Utah, Wash)

**ANDERSON BROS**  
 Golden  
**MALACHITE MINE, Jefferson**  
 Co., Cu  
 Idle

**ADDRESS, CLYDE & ASSOC**  
 Placerville  
**PAYROCK MINE, Mesa Co., U. V**

**ARKO, LOUIS**  
 Box 728, Canon City  
**SPKEBUCK #2, mica, feldspar**

**ARROWHEAD URANIUM CO**  
 518 1/2 Main, Grand Junction  
 Pres: Jack Monson  
**URANIUM CLAIMS, Colo & Wyo**  
 Explor & devel

**ATOMIC POWER URANIUM**  
**CORP**  
 Box 2266, Denver  
 Pres: Lucien Hugh Cullen  
 VP: Thomas S Bryan  
 Sec: H Arnold Guy  
 Treas: James E Kelley  
**EROT MINE (FORD-FORDO CL)**  
 Box 1234, Grand Junction  
 Gen Mgr: Desmond Peterson  
 Geol: Douglas O McGoon  
 Undergr U<sub>3</sub>O<sub>8</sub> prod  
**EAGLE CO Co., U<sub>3</sub>O<sub>8</sub>**

**AURORA URANIUM CO**  
 317 Main St, Grand Junction  
**LITTLE SONNE MINE, Mesa Co.,**  
**U. V**

**BARD CREEK MINE**  
 Empire  
 Owner: A F Mayham  
 Lessee: Clifford Whitworth  
**MINE, near Empire, Au, Ag,**  
**Pb, Zn**  
 Idle

**B D & P MNG CO**  
 c/o C A Bot., Rt 2, Glenwood  
 Springs

**UNDINE MINE, Gunnison Co.,**  
**Ag, Pb**

**B R C MINING CO**  
 Idaho Springs  
 Pres: W J Roberts  
**ALLEN EMORY MINE, Montevuma,**  
**undergr, Pb, Zn, Ag**  
 Idle

**BACHELOR MINE**  
 c/o Carl I Dismant, 3637 Birch  
 St, Denver 7  
**MINE, near Cury, undergr**  
 Idle

**BARTON URANIUM CO**  
 Uranium Center, Grand Junction  
 Sec-Treas: Gerald J Anshy  
**PAY DAY GR, 13 mi W of Uravan,**  
**U<sub>3</sub>O<sub>8</sub>**  
 Under devel  
**BULL CANYON, CARPENTER RIDGE**  
**PROP, U<sub>3</sub>O<sub>8</sub>**  
 Under devel

**BERYLLIUM MNG CO, INC**  
 Box 276, Gunnison  
 Pres: J R Wemlinger  
 Gen Mgr: C A Wemlinger  
 VP: J E Sheets  
 Sec: J T Dickey  
**ENIG CITY MINE, 27 mi from**  
**Gunnison, surface, beryl, mica,**  
**feldspar, tantalite, columbite**

**BLAINE MINE**  
 Owner: John Berzardis  
 Gen'l Machine Shop, Montrose  
**MINE, 14 mi S of Ridgeway, U. Th**

**BLUE CHIP URANIUM CORP**  
 6 Mar-a-las Equitable Bldg,  
 Denver 3  
 Pres & Gen Mgr: Joseph P Smith  
 VP: Joseph P Smith, Jr  
 Sec-Treas: L O Trout

**LADY LOUISE LOBE, 19 mi SW of**  
**Fair Play, undergr, open pit, U<sub>3</sub>O<sub>8</sub>**  
 Geol: John H Eggers  
 Met: Wm C Patterson  
 (See Utah)

**BODNAR BROS**  
 Louisville  
**BONANZA #1, WO<sub>3</sub>**

**BONITA MNG & DEV CO**  
 Box 194, Silverton  
 Pres: F C Brightly, Jr  
 Gen Mgr: H P Ehrlinger  
 Sec: V G Rinn  
**LEAD CARBONATE MINE, 11 mi**  
**NE of Silverton, undergr, Au, Zn,**  
**Pb, Ag, Cu**  
**PRIDE OF BONITA MINE, 11 mi**  
**N of Silverton, undergr, Pb, Ag, Zn**  
**EMMA-OREGON-GALENA GROUP,**  
**San Juan Co, Zn, Pb, Ag**  
 Under devel  
**50-TON FLOT MILL, Gladstone**  
**Supt: H P Ehrlinger**

**BRIDGER-JACK**  
 180 W Main St, Grand Junction  
 Pres: Garth W Thornburg  
 VP: G B Thornburg  
 Sec: Arthur M Kirkendall  
 (See Utah)

**BUCKSKIN JOE MINES, LTD**  
 Alma  
 Gen Mgr: C W Jordan  
**PHILLIPS MINE, Au, Ag, Cu, Pb,**  
**Zn, Fe**  
 Prod: 300 tons monthly  
 Foreman: Joe Thibodeau

**BUCKEYE MNS & MLG CO**  
 Westvill  
**BUCKEYE MINE, Teller Co.,**  
**Au, Ag, Pb, Zn**

**CALLAHAN ZINC-LEAD CO**  
 Whitewater  
**AKRON MINE, Zn, Pb, Ag**  
 Gen Supt: James E Dunn  
 Idle  
 (See Alaska, N Y)

**CAMP BIRD LTD**  
 70 Pine St, New York 5  
 Chmn: F C Haley  
 Sec: R B Riley  
**CAMP BIRD MINE, Cury,**  
**undergr, Pb, Zn, Cu, Au, Ag**  
 Lessee: King Lease, Inc  
 Gen Supt: K Johnson  
 Prod: 180 tons  
**200-TON FLOT MILL, at mine**  
 (See N Y)

**CANYON GOLD, INC**  
 208 E Bennett Ave  
 Cripple Creek  
 Pres: Troy E Wade  
 VP: William A Kyrner  
 Sec-Treas: Jesse Simmons  
**RUBIE & GRACE GREENWOOD**  
**MINE, 2 mi from Cripple Cr, Au**

**CHAMPION MINES CO**  
 641 Monroe St, Denver 8  
 Pres: Jesse Simmons  
 Sec: J J Simmons  
**MORNING STAR & LAST CHANCE**  
**MINES**

**LEASES ON JERRY JOHNSON,**  
**WPM & FOREST QUEEN MINES,**  
**Cripple Creek, undergr, Au**  
 Idle

**CHAVEZ, J A**  
 Nederland  
**HOLY CROSE & ORANGE BLOSSOM**  
**MINES, WO<sub>3</sub>**

**CHEROKEE-UTAH URANIUM**  
**CO**  
 Box 1589, Grand Junction  
**BEAVER MESA PROP, U<sub>3</sub>O<sub>8</sub>**  
 Under devel

**CLIMAX MOLYBDENUM CO**  
 Climax  
 VP: Western Oper: Frank Coolbaugh,  
 Midland Sav Bldg, Denver  
 Res Mgr: Robert Henderson  
 Asst Gen Supt: E J Eisenach  
 Mech Maint Eng: Wm Vierling  
 Elec Eng: Urban Toucher  
 Saf Eng: T A Hoy  
 Contr: W H Wison  
 Purch Agt: J E Russell, Midland  
 Sav Bldg, Denver  
 Explor: John Curran, Midland Sav  
 Bldg, Denver  
 Research Met: R E Cuthbertson,  
 Golden

A J Herrig, Detroit  
 Vice Asst Dir: Gordon Welles  
**CLIMAX MINE, Climax, 100 mi W**  
**of Denver, undergr, & surface,**  
**MoS<sub>2</sub>, WO<sub>3</sub>, Sn**  
 Prod: 28,000 tons  
 Mine Supt: John Petty  
 Asst Mine Supt: W F Distler  
 Mine Engr: Cecil Smith  
 Mine Foreman: Joffre Johnson &  
 C A Cleeves  
 Ch Mine Eng: M S Walker  
 Mine Mech Foreman: Cecil Smith  
**28,000-TON FLOT MILL**  
 Mill Supt: Max Dessau  
 Asst Mill Supt: Frank Windolph  
 Ch Chemist: E B Anderson  
 (See N Y)

**CLIMAX URANIUM CO**  
 Box 1901, Grand Junction  
 Pres: Frank Coolbaugh, Midland Sav  
 Bldg, Denver  
 VP: Marvin L Kay  
 Sec: Lester A Cowen  
 Treas: Wallace Macgregor  
 Purch Agt: L J Mann  
 Research Dir: Woodrow Knott  
 Consul: E J Duggan  
**MINES in Colo, Utah & Ariz,**  
**50-310 mi S-SW of Grand Junction,**  
**undergr, U<sub>3</sub>O<sub>8</sub>, V**  
 Undergr prod  
 Mine Supt: J E Weston  
 Prod Super: T E McCandless  
 Gen Foreman: Andy O'Kora  
 Ch Geol: A M Mastrovich  
 Asst Ch Geol: R H Sayre  
 Geol: K D Kasach, M L Willey,  
 R Warner, R Nakasaka  
 P Donnerstag, C Russ  
 R Darnell

**CHEM MILL**  
 Grand Junction  
 Mill Supt: R C Toerper  
 Asst Mill Supt: Paul Wire  
 Elec Eng: J M Noy  
 Ch Chem: Q S Kocher  
 Maint Mech: G K Burnhart  
 (See Ariz, N Y, Utah)

**COBB & WELDON**  
 501 Pine St, Boulder  
**MINES, Boulder tungsten dist,**  
**surface, W**  
 Prod: 70 tons  
 Mine Supt: Harrison S Cobb  
**70-TON GRAV MILL, Lakewood**  
**near Nederland**  
 Mill Supt: A B Weldon

**COCREHAM, W A**  
 3165 W Colorado, Colorado  
 Springs

**VALLEY VIEW MINE, mica,**  
**feldspar**

**COLD SPRING TUNGSTEN,**  
**INC**  
 408 Interstate Trust Bldg, Denver  
**COLD SPRING MINE, Boulder Co.,**  
**WO<sub>3</sub>**

**COLO AGGREGATES CO, INC**  
 Mesita  
**MINE, 2 mi W of Mesita**

**COLO FUEL & IRON CORP**  
 Continental Oil Bldg, Denver  
 Pres: A P Franz  
 Sec: D C McGrew  
 Treas: H C Croul

**MINING DEPT**  
 Box 314, Puerlis  
 VP, Oper: J J Martin  
 Dir, Purch: L C Rose  
 Mgr, Mines: R R Williams, Jr  
 Ch Eng, Mng Dept: W J Schenier  
 Ch Geol: D A Carter  
 Ch Elec: J W Irwin, Trinidad  
**MONARCH QUARRY, limestone**  
**Salida**  
 Supt: J E Whitney  
 Prod: 3,000 tons  
**CANON DOLOMITE QUARRY**  
 Canon City  
 Supt: E C Jagow  
 Prod: 325 tons  
 (See Wyo)

**COLO GOLD KING MINES,**  
**INC**  
 Box 194, Silverton  
 Pres & Gen Mgr: H P Ehrlinger  
 VP: A D Miner  
 Sec-Treas: V W Tockay  
**GOLD KING MINE, undergr, Au, Ag,**  
**Pb, Cu, Zn**  
 Under devel

**COLO MNG CORP**  
 414 University Bldg, Denver  
**MINE, Hahn's Peak, Clark, Co, Au,**  
**Ag, Mo**  
 Geol: George F Schrieber  
**SMELT & REFIN**  
 Garfield  
 Assay: Henry E Woods

**COLORADO URANIUM MINES,**  
**INC**  
 384 Main St, Grand Junction  
 Pres: Arnold L Kimmess  
 Sec: J O Kaysbier  
 Gen Supt: C Barney  
 Geol: K Huston  
**LOST MINE, San Miguel Co, Gypsum**  
**Valley, 59 mi SW of Nucla, undergr**  
**U, V**

**COLUMBINE PLACER MINES,**  
**INC**  
 Rm 308, 1030 15th St, Denver 2  
 Pres: Samuel Johnson  
 Sec: Dwight F Johnson  
**RED BUCK MINE, 35 mi NE of**  
**Gunnison, undergr, Au, Ag, Cu**  
 Under devel

**COMMERCIAL MNG, INC**  
 Box 303, Marshfield, Wisc  
**RESERVATION MINE**  
 Gen Mgr: Ernest Blair, Norwood  
 Eng: John Hoyman, Telluride  
 Under devel  
 (See Wisc)

**CONGRESS URANIUM CORP**  
 402 Darling Bldg, Salt Lake City,  
 Utah

Pres: Leo G Meredith  
 Sec-Treas: Karl F Buehl  
**CONGRESS MINE**  
 Bull Canyon

**CONSOL GOLD-URANIUM**  
**CORP**  
 1054 S Broadway, Denver  
 Pres & Gen Mgr: Walter L  
 Plankin

VP: Ralph L Bradley  
 Sec-Treas: C O Cranmer  
**MINE, Blackhawk, undergr, Au,**  
**Ag, Pb, pitchblende**  
 Asst Gen Mgr: Ralph L Bradley  
 Gen Supt: C L Barker

**CONSOL URANIUM MINES,**  
**INC**  
 307 Darling Bldg, Salt Lake City,  
 Utah

**URANIUM EXPLOR, various prop**  
**in Colo**  
 (See Nev, Utah)

**CORTINENTAL URANIUM,**  
**INC**

Box 1569, Grand Junction  
 Pres: Willard Oldwitt  
 VP: Ray G Sullivan  
 Sec-Treas: Max H Groom  
 Gen Mgr: R C Prosser  
 Ch Geol: Harold M Smithson  
 Mng Eng: Jack Sheridan  
 Geol: T E Neam, Darrell Spencer  
**MINE, U<sub>3</sub>O<sub>8</sub>**  
 Producing  
 (See Utah)

**CORDILLERA CORP**  
 902 Seaboard Bldg, Seattle 1  
 Wash

Pres & Gen Mgr: Robert P Day  
 VP: Harry H Eckman  
 Sec: B A Merlino  
 Gen Supt: Harry Dunn  
**LING MINE, Box 61, Fairplay,**  
**4 mi N of Alma, Au, Ag, Cu,**  
**Zn**  
 Under devel  
**FLOT MILL, South Platte Gulch**

**COSTELLO LEASE**  
 Bonanza Rd, Villa Grove  
 Oper: W J Costello  
**RAWLEY MINE, Bonanza, 20 mi**  
**NW of Villa Grove, undergr, Pb,**  
**Zn, Ag, Cu**  
 Prod: 50 tons

**CRESCENT URANIUM MINES,**  
**INC**  
 Denver  
**CRESCENT CLAIMS, Outlaw Mesa,**  
**Montrose Co, U<sub>3</sub>O<sub>8</sub>**  
 Producing

**CRESSON CORP GOLD MNG**  
**& MLG CO, THE**  
 Box 177, Cripple Creek  
 Pres: M E Shoup  
 VP & Gen Mgr: Max W Bowen



**See: H Bales**  
Gen Supt: A H Bales, Jr  
Mech Supt: Guy Rorbaugh  
Purch Agt: R L Stone  
MINE, 2 mi E of Cripple Creek,  
undergr, Au  
Mier Supt: A H Bales, Jr  
Prod: 100 tons

**CRIPPLE CREEK MNG & M.L.G. CO.**  
Box 949, Cripple Creek  
Pres: Loris Hagler  
Sec: John Adair  
Gen Mgr: Richard D Walls  
**GOLD KING MINE**, 1 mi from  
Cripple Cr, undergr, Au  
Idle  
(See Art)

**CROWN URANIUM CO**  
305 Star Bldg, Cooper, Wyo  
**LOVE MINE URANIUM MINE**  
Noria  
Gen Mgr: Glenn R Neesham  
Gen Supt: Deane Kinnaman  
Geol: Donald M. Williams  
Open pit production  
(See Utah, Wyo)

**CUMBER MNG CO, INC**  
Box 186, Alamosa  
Pres: Whitford W Myers  
VP: Richard Frink  
Sec: Pedro Vigil  
Treas: Browning Clark  
Gen Mgr: C O Rosacker  
**CLAIMS**, Sango de Cristo Range,  
N of Alamosa, rare minerals  
Explor  
**REDWING LEASES**, near Redwing,  
U.V., certain, rare earths  
Explor

**CYPRUS MINES CORP**  
430 1/2 Main St, Grand Junction  
**URANIUM CLAIMS**  
(See Art)

**DANIEL, GEORGE S**  
625 F St, Salida  
**STONEWALL MINE**, Chaco Co

**DAVENPORT, W L**  
Brackendale  
**WELLINGTON MINE**, 2 1/2 mi E  
of Brackendale, undergr, Pb, Zn,  
Ag, Au  
Prod: 20 tons  
Mine Supt: Harold Horn  
Mine Supt: Marvin Burger

**DEADWOOD LEASING CO**  
Cripple Creek  
MINE, Au  
Idle

**DEFENDERS MNG CO**  
188 Elm, Oak & Silver Cliff  
Partners: Ray O Pratt, Vic Greer,  
Bud,  
E F Stacy, Wm Cody,  
Silver Cliff

**DEFENDER MINE**, undergr, Pb, Zn,  
Ag  
Gen Mgr: E F Stacy

**DIAMOND MT MINES, INC**  
Idaho Springs  
Mgr: Wm Wright  
**KITTY CLONE MINE**, Clear Cr Co  
Idle

**DODGE URANIUM CORP**  
224 Main Bldg, Denver &  
Uraniun Gester Bldg, Grand  
Junction  
Pres: Sumner D Dodge  
VP & Sec: E B Yates  
Treas & Asst Sec: R G Decker  
**FLUXIDE MINE**  
Gateway  
Gen Mgr: Wallace W Winfield  
Asst Gen Mgr: Howard Knell  
Helting Phil, Don Williams  
Undergr U<sub>3</sub>O<sub>8</sub> prod  
(See Utah)

**DOYLE URANIUM CORP**  
Box 143, Colorado Springs  
Pres: M E Doyle  
VP: J D Stone  
Sec-Treas: E G Untiedt  
**RYCH PINE MINE**  
Naturite  
Gen Supt: Jim Galyean  
Geol: Glen Hanson  
Undergr U<sub>3</sub>O<sub>8</sub> prod

**DULANEY, RICHARD O, JR**  
608 Reed St  
Gen Mgr: Richard O. Dulaney, Jr

Geol: Ralph H Whitlot, John F Hill  
Office Mgr: Doc Booth  
**URANIUM EXPLOR**, Colorado  
Plateau  
(See Utah)

**DULANEY MNG CO**  
212 First Nat'l Bank Bldg  
Grand Junction  
Pres: R O Dulaney  
VP: C H Dulaney & Harry B  
Friedman  
Sec-Treas: Thomas E Potts  
Gen Mgr: Frank H MacPherson  
Gen Supt: Leroy Hemphill  
Geol: George Gilmore, Jr &  
Philip F Powers  
Purch Agt: Mrs Inga Potts  
**RADIUM GP OPER**, 2 1/2 mi N of  
Dove Creek, undergr, U, V  
Undergr prod

**E & H LEASING CO**  
Meeker  
**BURRELL #1 & LAST DAY MINES**,  
Montrose Co, U

**EAGLE PITCHER CO, THE**  
132 S W St, Grand Junction  
(See Art), Ill, Nev, Kans, Okla,  
Utah, Wisc)

**EAST, JIM & KING, K J**  
Idaho Springs  
**CRAZY GIRL MINE**, Clear Creek  
Co, Au, Ag, Pb  
Idle

**EAST RIDGE CO**  
Box 550, Ouray  
Pres: Carlton E Ryan  
Gen Supt: A E Dirrion  
Geol: F H Frederick  
**ANDRUS MINE**, 14 mi NW of  
Silverton, undergr, Zn, Pb, Cu,  
Ag, Au  
**KOENLER MINE**, 10 mi N of  
Silverton, undergr,  
Under devel  
(See Calif)

**EDWARDS MNG & EXPLOR  
CO, INC**  
Denver  
**URANIUM CLAIMS**

**ELDORADO URANIUM CO**  
328 17th St, Denver  
Pres: R C Patterson  
VP: A B Chase  
Sec: D C Jacobson  
**URANIUM CLAIMS**

**EMPERIUS MNG CO**  
Empire Bldg, Creede  
Pres: T B Foxe  
Treas: H D Hayden  
Gen Mgr: B T Foxe  
**COMMODORE, AMETHYST,  
EQUINOX, ROBINSON & HAPPY  
THOUGHT MINES**, 1 1/2 mi N  
of Creede, Pb, Zn, Ag, Au, Cu  
Mine Supt: T B Foxe  
Mine Foreman: A M Davis, S K  
Weaver, R R Lehman  
**120-TON FLOT MILL**, 1 mi S of  
Creede  
Mill Supt: W S Kolisch  
Assay: Gordon Woodhull

**ETA MINES**  
307 Main, Grand Junction  
Partners: Frank L. Seymour,  
Vernon Pick & Jim Martin  
**RAE MARIE MINE**, 16 W of  
Gateway, undergr  
Mine Supt: James F Martin  
Under devel

**EUREKA TUNGSTEN**  
c/o Guy Piles, 2305 5th St  
Boulder  
**EUREKA MINE**, Boulder Co, W.D.  
Under devel

**EXPLOR & DEVEL CO**  
Reed Bldg, Grand Junction

**FINCHER, OTIS**  
226 Pine St, Grand Junction  
**ROHIE #1 MINE**, Mesa Co, U, V

**FLANDERS MNG CO**  
Box 841, Grand Junction  
Partners: Gen F L Anderson, Lee  
Van Atta, Haven P Slagel  
Agent: Wm M Spencer  
**IDA MAY DRIFT**, 7 mi N of Pitkin  
on Cumberland Pass, undergr, W.D.  
Gen Mgr: Haven P Slagel  
Asst Gen Mgr: Wm M Spencer  
Gen Supt: W H Monson

Geol: Elliot Goldstein  
Mech Eng: Warren Longley  
Asst Mine Supt: Paul Kachan  
Mine Eng: Elliot Goldstein  
Under devel

**FLORADO MNG CO**  
Montezuma  
Oper: Elvin Oelrich  
**MINES**, Summit Co, Ag, Cu, Pb  
Under devel

**FOLSOM, JOSIE K MNG &  
MLG CO**  
4350A Holly Ave, St Louis 13, Mo  
Pres: Dr C B Curran  
Dir: Paul Becker  
Dir: Oscar F Huegel  
**JOSIE K FOLSOM GP**, undergr, Au,  
Saguache  
Gen Mgr: Fred W Kubla  
Under devel

**FORGE HILL TUNNEL**  
St 1, Box 187, Golden  
Gen Mgr: Clifford E Morrison  
Asst Mgr: W A Horne  
**TUNNEL**, 1/2 mi SW of Russell  
Galch, undergr, Pb, Zn, Ag,  
Au, Cu

**FORTUNE MINE**  
Leadville  
Leases: J L Adams & G L  
Fairchild  
**MINES**, Lake Co, Pb, Zn, Au, Ag  
**FOSTER, RALPH**  
1317 Colorado Ave, Grand Junction  
**SNOW SHOE, MESA #3**

**FOUR CORNERS URANIUM  
CORP**  
434 U S Nat'l Bank Bldg,  
Denver 1  
Pres & Gen Mgr: E H Sanders  
VP: John W Gramlich, Sr  
Sec-Treas: A H Schnell  
Gen Supt: R E Williams, W R  
Brennan

Cons Eng: C R Willey  
**MINES**, Bull Canyon, Lion Creek,  
undergr, U, V  
Producing  
(See Utah)

**FOURSOME MNG CO**  
Silverton  
Gen Mgr: Wm Erickson  
**COLUMBUS MINE**, Au, Ag, Cu,  
Pb, Zn  
Idle

**FRONT RANGE MINES, INC**  
Burns Vault Bldg, Denver  
Pres & Gen Mgr: John Deereisen  
VP: Paul R Spencer  
Sec-Treas: H P Macaulay  
**MATTIE MINE**, Clear Cr Co,  
Pb, Au, Ag  
**MELVINA MINE**, Boulder Co, Au  
**STRONG & MARY CASHNER MINES**,  
Teller Co, Au  
**KING SOLOMON GROUP**  
Under devel  
**CLEAR CREEK MILL**, Summit,  
Illa  
Capacity: 200 tons

**GALENA QUEEN LEASING CO**  
c/o Glenn Gardner, Silverton  
**MINE**, San Juan Co  
Idle

**GARFIELD MINE**  
Box 158, Salida  
Gen Mgr: W E Burleson  
Contractor: Carl McMillen  
**GARFIELD MINE**, 30 mi W of  
Salida, undergr, Pb, Au, Ag  
Idle

**GATEWAY MNG & DEVEL CO**  
Route A, Grand Junction  
Pres & Gen Mgr: Edw Gilmore  
VP: R C Hartman  
Sec: John Thomson  
Treas: Norman Tetloff  
Engr: Jake Lewis  
**CONVULSIT MINE**, 11 mi W of  
Gateway, undergr  
Prod: 20 tons  
(Purchased by Flanders Mng Co,  
which seel)

**GAYMON & WEBB**  
Brackendale  
**PITTSBURG PLACER LOSE**,  
Summit Co, Au, Ag, Pb  
**GENERAL MINERALS CORP**  
Georgetown

**GRIZZLY GULCH GP**, 2 mi S of  
Bakerville, undergr, Pb, Zn, Au,  
Ag, Cu  
**PLOT MILL**  
(Purchased from Lupton Mng Co,  
Illa)

**GERONIMO URANIUM MNG  
CORP**  
2-2 S State St, Salt Lake City,  
Utah

**PARROT GP**, U<sub>3</sub>O<sub>8</sub>  
Prod  
(See Utah)

**GILES, LEROY & CO**  
Idaho Springs  
**DIKE MINE**, Clear Creek Co

**GLOBE HILL MNG CO**  
335 Independence Bldg,  
Colorado Springs  
Pres & Gen Mgr: A S Kneelsman  
VP: Payton Gregory  
Sec-Treas: George F Grets  
**URANIUM EXPLOR**, Colo Plateau  
Mine Supt: Harry Allen

**GOLD RANGE, INC**  
Boulder  
**WARD-SP MINE**, Boulder Co, Au,  
Ag, Cu

**GOLDEN CYCLE CORP**  
Box 98, Carlton Bldg,  
Colorado Springs  
Pres: M E Shoup  
Exec VP: Max Bowen  
Supt, Explor: Ben Slothower  
Purch Agt: Howard Stone  
**AJAX MINE**, Cripple Creek, Au  
Supt: Charles Carlson  
Foreman: M H Grice  
**1,000-TON FLOT-CYAN MILL**  
Supt: Howard Keil  
**MINE**, Atkinson Mesa near  
Uravan, U, V  
Supt: Earl C Phillips  
Under devel  
**URANIUM EXPLOR**, Monogram  
Mesa, Montrose Co

**GOLDFIELD DEVEL CO**  
Goldfield, Nev  
**LUCKY STRIKE LEASES**, Calamity  
Mesa U<sub>3</sub>O<sub>8</sub>  
Producing  
(See Nev, Utah)

**GREAT BASINS PETROL CO**  
207 Denham Bldg, Denver  
Pres: C G Glasscock, Jr  
VP: J R Anderson, Harvey L Hurley  
Sec: A V Witham  
Treas: A M Biderman  
Purch Agt: Robert J Mass  
**KEYSTONE, SANTA MARIE,  
RAINBOW MINES**, near Dove Cr,  
open pit, U, V  
Mine Supt: C J Gillespie  
Geol: Howard H Odiorne

**GREAT EASTERN MNG CO**  
Silverton  
Pres: W L Chase  
Ch of Bd: Art Linkletter  
Purch Agt: Carl Leason  
**GREAT EASTERN BURNS GULCH,  
SIOUX CITY, GREEN MT &  
PEIDE OF THE WEST MINES**,  
undergr, Au, Ag, Cu, Pb, Zn  
(Leased to Flemming, Shado &  
Knalls)  
**100-TON FLOT MILL**, Howards-  
ville  
Owner: J C Grant

**GREAT LAKES CARBON  
CORP**  
Rosita  
**ROSITA MINE**, Rosita,  
surface, perlite  
**100-TON MILL**, Florence  
(Seq Colo, Calif, Nev,  
New Mex, WY, Ore)

**GREAT WESTERN URANIUM  
CO**  
740 Main St, Grand Junction  
**URANIUM EXPLOR**

**GREGORY & PACKARD  
FLACER**  
Blackhawk  
Owner: L D Clark  
**MINE**, Gilpin Co, Au  
Idle

**GROMER, JOE**  
St L, Evergreen  
**GROMER MINE**, near Tignes,  
undergr, open pit, feldspar, mica



**HASSELBUSH, RAY & ZIEGENHIS, HENRY**

Box 484, Rifle  
MIDNIGHT MINE, 18 mi NE of  
Meeker, undergr., U, V  
Undergr. prod.

**HENNING, KETTLE & WALKER**

Westcliffe  
DEFENDER MINE, undergr., Ag,  
Pb, Zn  
(Leased to Ed Stacy)

**HERRON BROS**

Box 448, Aspen  
Mgr: John L. Herron  
HENRY CLAY GROUP, Aspen,  
Ag, Pb

**HETZER MINES, INC**

1st Nat'l Bank Bldg, Denver 2  
Pres: Boris Pregel  
VP: Alexander Pregel  
Sec: Paul Newman  
Treas: Wm Rosenblatt  
HETZER MINE, undergr., WO<sub>2</sub>  
Nederland  
Gen Mgr: G C Ridland  
Mine Supt: Maurice Castagne  
Mine Engr: Jim Gilkinson  
Prod: 30 tons  
COLDSPRINGS, HOOSIER, LAST  
CHANCE MINES, PROSPECT,  
SPENCER TUNNELS  
56-TON GRAY MILL  
Nederland  
Mill Supt: Elmer Hetzer  
Asst Mill Supt: Bill Nolan

**HUNT OIL CO**

Grand Junction  
URANIUM CLAIMS, San Miguel  
Co, Montrose Co, U<sub>3</sub>O<sub>8</sub>  
Under devel  
MIDDLE LEASONS, Paradox Cr,  
U<sub>3</sub>O<sub>8</sub>  
(See Utah)

**HOLDENMAN, E T**

Uranium  
LONG PARK #6 & #12 MINES, 13  
mi SE of Uranium, undergr., U, V  
Mine Supt: E T Holdenman  
Mine Foreman: Calvin O'Bryen

**IDA BELLE MINE**

Breckenridge  
Sub-lessee: Wm K Kirschmer

**IDARADO MNG CO**

Box D, Ouray  
Pres: M D Banghart  
Gen Mgr: John S Wise  
MINES, 12 mi SW of Ouray on  
Red Mountain, undergr., Co, Pb, Zn  
Prod: 800 tons  
Mine Foreman: John Kearney  
Mine Engr: C C Chamberlain  
800-TON FLOT MILL  
Mill Supt: R W Unger  
(See Newmont Mng Corp., East)

**IDEAL CEMENT CO**

500 Denver Nat'l Bank Bldg,  
Denver  
Ch Prof Engr: J C Andrews  
OPEN PIT MINE, near Coaldale,  
gypsum

**INTERNATL MIN & CHEM****CORP FELDSPAR DEPT**

Denver

**Supt: Lawson Comer****NICA OPERATIONS**

Parkdale & Pueblo

Super: Mgr: C McDaniel

(See Ari., Fla., Ill., Me., Miss,

N. H., New Mex., N. D., N. Y.,

Ohio, S. D., Tenn., Va.)

**ISABELLA MINES, INC**

Colorado Springs

Pres: Wm A Kyner

VP: Franklin Ferguson

Sec-Treas & Gen Mgr: J H

Kesner

**ISABELLA MINE, Cripple Creek**

Ida

**JACK PINE MNG CO**

507 Boston Bldg, Denver 2

Pres & Gen Mgr: D V Watrous

VP: John B Traylor

Sec: Wm D Rhoad

STEVENS, BENDOTA, BLACK

EAGLE, INGHAM, & GABANTA

MINES, Clear Creek Co, Pb, Ag,

Au, Zn, Cu

100-TON FLOT MILL, Black Eagle

75-TON GRAY MILL, Mendota

20-TON FLOT MILL, River Leaf

**JEFFREY & ULIBARRI**

Montevideo

QUAIL, WATERLOO, NEW YORK

MINES, Summit Co

Ida

SILVER KING MINE, Summit Co

PLYMOUTH MILL

**JEWELL, LOREN**

Rifle

MAMOUTH MINE, Mesa Co, U, V

**JOE DANDY MNG CO**

334 Independence Bldg,

Colorado Springs

Pres: Hildreth Frost

VP: Vernon Mitchell

Gen Mgr & Treas: A S Kesselman

Sec: C E Yoss

Supt: Harry Allen

JOE DANDY, C O D, COMBON-

WEALTH, HILLSIDE, CLIMAX

VICTORY & SEATTLE MINES,

3-5 mi E of Cripple Cr, undergr.,

surface, Au

**JOHNSON BROS & PRIME**

Nederland

HOOSIER MINE, WO<sub>2</sub>

**JONES, MYRON & ASSOC**

Rico

ST LOUIS CLAIM, Dolores Co, Au

**JONES LEAD & ZINC MINES**

CO

Box 921, Leadville

Owner: Robert L. Jones

CARIBALDI MINE, 2 mi E of

Leadville, undergr., Pb, Zn, Au, Ag

Ida

SUMMITVILLE MINES, 45 mi W of

Monte Vista, undergr. & surface,

Cu, Au

Ida

RESURRECTION #2, 2 mi E of

Leadville, undergr., Pb, Zn, Au, Ag

Prod: 100 tons

Mine Foreman: R A Biddix

**JUMP MNG CO**

916 14th St, Boulder

Oper: Geo Jump

GOOD FRIDAY MINE, WO<sub>2</sub>

**KANARADO MNG & DEVEL**

CO

Box 27, Ohio

Pres: Charles Vashus

VP: B V Warren

CARTER MINE, Gunnison Co, Au, Ag

FLOT-AMAL MILL

**KATHY JO MNG CO**

Gunnison

URANIUM CLAIMS, Cockatope Cr

Lessee: Fred Abrahamson & Assoc,

Colorado Springs

**KENNEBEC MNG CO**

Cannon City

Lessee: M J Krotz

Gen Mgr: A E Moynahan

Supt: R L Robeson

OWPHAN BOY MINE, Park Co

Ida

**KING LEASE, INC**

Ouray

Pres: Kenneth Moore

VP: Joseph King

Sec: Franklin A Bell

Purch Agt: J E Danielson

CAMP BIRD MINE, 6 mi SW of

Ouray, undergr., Pb, Zn, Cu, Ag, Au

Supt: L D Barry

Asst Supt: F A Bell

Foreman: Ted Mason

Prod: 175 tons

175-TON FLOT MILL

Mill Foreman: Wayne Dove

(Leased from Camp Bird, Ida)

**KINGS TURQUOISE CO**

Minerals

Pres: Charles G King

Mgr & Mine Foreman: Horace E

King

**TURQUOISE MINE, Maasaka**

King

**KIRK BASIN URANIUM CO**

608 Roof, Grand Junction

Pres: Richard O Dulaney, Jr

VP: C Harrison Cooper

Treas: Wm V Coffey

EXPLORATION DRILLING, U<sub>3</sub>O<sub>8</sub>

Gen Mgr: Richard O Dulaney, Jr

Geol: Ralph Wilpolt

**KIRSCHMER, WILLIAM**

Idaho Springs

EAST LAKE MINE, Clear Creek,

Au, Ag, Cu, Pb

**KNICKERBOCKER MNG CO**

Rino

Gen Mgr: E L Erickson

Asst Gen Mgr: N J Knickerbocker

Gen Supt: Edward C Baer

UNION CARBONATE MINE, 3 mi E

of Rico, undergr., Zn, Pb, Ag,

Ida

**KOSTELIC, LOUIS**

Leadville

BI-METALLIC & FREE COINAGE

MINE, Lake Co, Au, Ag, Pb

**KROSBORN, ROBERT F**

Rockwood

MINE in San Miguel Co, U

**L & L URANIUM CO**

923 1st Nat'l Bank Bldg, Denver 2

EXPLOR & PROP, various parts of

Calo

(See Wyo)

**LA GARITA MINES**

Box 61, La Garita

MINE, Saguache Co, Au

20-TON FLOT MILL

Ida

**LA SALLE MNG CO**

Box 217, Grand Junction

Partners: M M Hardin, Ray M

Edel, G T Rummel, M P Rowe

CLUB MESA MINE, undergr., U, V

Uranium

Co-Mgrs: M P Rowe, G T Rummel

Undergr. prod

UNDEVEL MNG PROP, various

parts of Colo

**LAKE MNG CO**

Idaho Springs

LAKE MINE, Clear Creek Co, Au,

Ag, Pb

Ida

**LAKALUCRE MINES, INC**

Corte

Pres: Thomas H Shidmore

VP: H C Bidwell

Sec-Treas: R N Usher

Dir: J M Wallace, W P Whitman

URANIUM PROP UNDER DEVEL

**LAMBERTSON, JOHN**

Gunnison

STAR MINE GROUP, 50 mi N of

Gunnison, undergr., Pb, Ag

Prod: 300 tons per year

DOCTOR MINE, 27 mi N of

Gunnison, undergr., Zn

Ida

**LEADVILLE LEAD & URANIUM CORP**

718 Symes Bldg, Denver

Pres: Robert G Risk

VP: Chandler Weaver

Sec: Don L Wright, Jr

Treas: Francis K Wiock

Gen Mgr: Harvey Tedrow

Vast Gen Mgr: James Tiffany

Geol: Lumber Explor, Ltd

URANIUM EXPLOR

HILLTOP MINES, undergr., Pb, Zn,

Ag, Cu

Fairplay

Ida

**LECLAIR CONS MNG CO**

Box 127, Cripple Creek

Gen Mgr: Max W Brown

MINE, Cripple Creek, Au

**LEHR, HENRY O**

Grand Junction

THUNDERBOLT MINE, Montrose Co,

U

**LEHR, VERNON L**

Gateway

MINE, Calamity Mesa, 17 mi E of

Gateway on Uncompaghe Plateau, U

**LITTLE DARLING MINES**

c/o Sophie Knight, Minerva

MINE, Gunnison Co, Ag, Pb

**LOMBARD MINES, INC**

Idaho Springs

Pres & Gen Mgr: Oscar L

Stinnerath

VP: M A Isere

LOMBARD MINE, 12 mi NW of

Idaho Springs at Alito, Au and

Fez minerals in black sand

concentrate

Under devel

Mine Supt: Henry L Nelson

Mine Engr: E A Hollingsworth

**LOMA URANIUM CORP**

212 Denver Theatre Bldg,

Denver 2

Pres: Carl L Lough

Sec: John R Moran

URANIUM PROSPECTS

**LUDWIG, ROBERT & CO**

429 Colorado Ave, Grand Junction

URANIUM EXPLOR

**LUPTON MNG CO, INC**

Box 498, Georgetown

Pres & Gen Mgr: Ellis P Lupton

VP & Asst Gen Mgr: J C Lupton

Sec & Purch Agt: W E Verma

Metal: Axel Johnson

**M & S INC**

Salida

Pres: J W Magnuson

Gen Mgr: R H Magnuson

HOMESTAKE MINE, surface,

feldspar

**MACKAY MINES, INC**

c/o R V Mackay, Box 289, Boulder

MINE, Gilpin Co, Au, Ag, Cu, Pb

Under devel

**MARCY EXPLOR & MNG CO,**

**MOLYBDENUM CORP OF AMERICA**

**EMPIRE**  
**GRAND MINE & MILL**, undergr. Mo  
 Mgr: John B. Carson  
 Idls  
 (See Calif., New Mex., N.Y., Penn.)

**MONO DIAMOND JOE MINES**

**Idaho Springs**  
 Mgr: Arthur Porter  
**MINE**, Clear Creek Co.  
 Idls

**MONTA CRISTO OP**

**Alma**  
 Oper: G. F. Calloway, Jr.  
**MINES**, Summit Co., As, Ag, Pb, Zn

**MONTESUMA URANIUM, INC**

**Montesuma**  
 c/o Tom E. Martin & Patrick J. Vinton

**MINE**, Collier Mts., near Montesuma, U<sub>3</sub>O<sub>8</sub>

**CHATAQUA MINE & MILL**  
**PAY MASTER MINE**

**MORRISON, CLIFFORD E**  
 Rt 3, Box 307, Golden  
**MINE**, Clear Creek Co., As, Ag, Cu, Pb, Zn

**MUNROE, E W**

Rt 2, Box 373, Ft Collins  
**GOODWIN GYPSUM QUARRY**, Larimer Co., gypsum

**NABOB DEVEL CO**

612 Majestic Bldg., Denver  
 Pres: C. H. Froman  
 VP: G. V. Critch  
 Gen Mgr: Chas. O. Parker  
 Sec: E. M. Stuart  
**NABOB MINE**, 2 mi S of Lawson, undergr., Ag, Pb, Au, Cu  
 Supt: Chas. O. Parker

**NATOMAS CO**

**DREDGE #1**, Park Co., As, Ag  
 Encl: Supt: Wade Skinner  
 Idls  
 (See Calif., Nevada)

**NEESHAM MNG CO**

**Nuclea**  
 Gen Mgr: Glenn D. Neesham  
**BOCKEN MINE**, Bush Canon, undergr., U, V

**NEDERLAND MINES, INC**

Office of Sec: 391 Ave of the Americas, New York, N.Y.  
 Pres: Carl Rosen  
 Gen Mgr: Matthew Olsson  
 Sec: G. A. Harnish  
**CARIBOU MINE**, 1400 Pearl St., Boulder, 1 mi S of Nederland, undergr., Ag, Pb, Au  
 Under devel  
**109-TON FLOT MILL**, 6 mi S of Nederland

**NEVADA MINES CO**

Box 105, Bonanza  
 Pres: Walter Timney  
 Gen Mgr: J. G. O'Brien  
**CORA MINE**, As, Ag, Cu, Pb, Zn  
**EMELTER**  
 Foreman: Curtis Quinn  
 Assay: E. E. Smith  
 Idls  
 (Looked to Lester Cahill)

**NEVADA URANIUM DEVEL CO**

2660 North Ave.,  
**URANIUM DEVEL**

**NEW DOMINION MNG CO**

**Ogden**  
 Mgr: Randolph Bellale  
**NEW DOMINION MINE**, Ogden, As, Ag, Pb  
**GRAV MILL**  
 Idls

**NEW JERSEY ZINC CO**

**EMPIRE ZINC DIV**  
 Gilman  
 Gen Supt: Empire Zinc Div.  
 F. J. Malott  
 Supt: Gilman Oper: W. L. Jude  
 Plant Chief: Harold Stimmer  
 Engr & Geol: R. E. Redabaugh  
 Personnel: Frank Sherwood  
 Accountant: R. E. Sundberg  
**EAGLE MINE**, undergr., Pb, Zn  
 Mine Chief: D. L. Barry  
**1,200-TON FLOT MILL**

Mill Chief: J. G. Craig  
 (See New Mex., N.Y., Penn., Va., Wis.)

**NEW MONARCH LEASE**

Box 609, Leadville  
**NEW MONARCH GROUP**, Steamboat, undergr., As, Ag, Cu, Pb, Zn  
**25-TON GRAY FLOT MILL**

**NEW WORLD EXPLOR.**

**RESEARCH & DEVEL CORP**  
 Texas Creek  
**TAYLOR MINE**, 10 mi W of Texas Creek, undergr., U<sub>3</sub>O<sub>8</sub>  
 Under devel  
 (See Calif., Utah)

**NEW YORK & HONDURAS**

**ROSARIO MNG CO**

Electric Bldg., Grand Junction

**OLD HUNDRED GOLD MNG CO**

Box 448, Silverton  
 Pres: C. M. Kimball  
 VP: F. W. Henschwunder  
 Gen Mgr: W. G. Sooder  
**GARRY-OWEN MINE**, 6 mi NE of Silverton, undergr., Pb, Zn, Cu, Ag, Au  
 Idls  
**125-TON FLOT MILL**, Cunningham Gulch  
 Idls

**OLIVERS BROS**

**AMERICAN EAGLE MINE**, San Miguel Co., U, V

**ORTMAYER MNG CO**

1077 Quarry Ave., Grand Junction  
 Pres: C. G. Ortmyer  
 Gen Mgr & Sec: W. E. Haldane  
**MINE**, 25 mi N of Dove Creek, undergr., U<sub>3</sub>O<sub>8</sub>, V  
 Mine Supt: O. E. Jenson  
**LEGION LEASE**, Stickrock  
**MINES**, San Miguel Co., U<sub>3</sub>O<sub>8</sub>, V  
**EAST PARADISE GP**, U<sub>3</sub>O<sub>8</sub>, V  
 Under devel

**OTTER CREEK URANIUM & MNG CO**

Box 145, Silverton  
 Pres & Gen Mgr: H. P. Ehringst  
 VP: J. P. Lacey  
 Sec: V. W. Tookley  
**VALLEY RANCH MINE**, undergr., U<sub>3</sub>O<sub>8</sub>, V  
 Undergr prod

**OUTLET MNG CO**

Box 75, Creede  
 Purch Agt: L. W. T. Jackson  
**PHOENIX LOSE**, 2 mi N of Creede, Pb, Ag, Au  
 Mine Supt: Gavin W. Skinner  
 Asst Supt: Ralph C. Walker  
 Under devel

**OZARK-MANONING CO.**

**MNG DIV**  
 Box 448, Tulsa, Okla & Rosicare, Ill

**PORTNATE MINE**, undergr., open pit, fluorapat

Cowdrey

Gen Mgr: R. K. Wisco

Mine Supt: Ben Neher

Prod: 125 tons

**360-TON FLOT MILL**, at Northgate mine

Mill Supt: Wayne Fowler

**EMMETT & BLUE JAY MINES**, undergr., open pit, fluorapat

Jamestown

Contr: H. B. Williamson

**100-TON FLOT MILL**, at Jamestown

Mill Supt: Roger J. Hall

Mill Foreman: Henry T. Sauter

(See Ill., Okla)

**P M LEASERS**

Box 170, Empire  
 Mgr: C. E. Myers  
**GOLD PICTURE GROUP**, Clear Cr Co  
 Idls

**PACIFIC BASE METALS**

1225 Spoor Blvd., Denver

**MINE**, Gilpin Co., As, Ag, Cu, Pb

**PARK CITY CONS MINES CO**

Gilman

Gen Mgr: Nolan Probst

**KEYSTONE MINE**, Crested Butte, 10 mi N of Gilman, undergr., As, Pb, Cu, Ag

Under devel

(Operated by Amer Smelt & Ref'n Co-New Utah)

**PASSIFLORA MNG CO**

15 N 9th St., Canon City  
 Pres: Charles A. Billey  
 VP & Gen Supt: M. N. Taylor  
 Metall: Marie M. Shaw  
 Sec: Joe D. Blunt  
**PASSIFLORA MINES**, 1-1/2 mi N of Westcliffe, undergr., Ag, Pb, Cu, Au  
 Under devel

**PASTORE, JAMES**

1846 Walnut St., Boulder  
**CONCOR FLOAT BED**, WO<sub>3</sub>

**PATMASTER MINES**

Breckenridge  
 Oper: Mike Vincon  
**MINE**, Summit Co., Monte uma dist

**PENROSE URANIUM CO**

The Midland Savings Bldg., Denver  
 Pres: F. H. Bosco  
 Treas: C. C. Bosco  
**URANIUM CLAIMS**, various parts of Colo  
 (See Utah, Wyo)

**PHANTOM LOSE MNG CO**

743 E Penn St., Philadelphia, Pa  
**MINE**, near Canon City, mica, feldspar, Ba

**PICK URANIUM CO**

Grand Junction  
 Pres: Vernon J. Pick  
**CLAIMS**, Mesa Co., U<sub>3</sub>O<sub>8</sub>  
 Under devel  
 (See Utah)

**POSTON MNG CO**

Box 310, Canon City  
 Own: Adolph Poston  
**UNKNOWN DEERY MINE**, Ba

**PRIDE OF THE WEST, INC**

Box 422, Silverton  
 Agent: C. Leslie Larson  
**PRIDE OF THE WEST MINE**, San Juan Co., Zn, Pb, Ag, Au  
 Idls

**PRIME, GEO & JOHNSON BROS**

Nederland  
**HOOSIER MINE**, Boulder Co., WO<sub>3</sub>

**RADIATION MINES, INC**

Fairplay  
 Pres & Gen Mgr: Lee D. Wells  
 VP: Herman Bergstrom  
 Sec: W. M. Hoff  
**CLIMAX GP**, 60 mi SW of Grand Junction, undergr., U, V  
 Under devel

**RAINBOW PLACER, INC**

2844 Dewey St., Denver  
 Pres: Dan C. Harrington  
 VP: R. V. Sooton  
 Sec: Martin V. Keene  
**PLACERS**, Tin Cup, mag dist, Gunnison Co., Au, Ag  
 Idls

**RARE EARTHS MNG CO**

c/o Lindsay Chem Co., West Chicago, Ill

**LITTLE JOHNNY MINE**, 25 mi N of Placerville, undergr., U, Th, rare earths

Under devel

**40-TON FLOT MILL**, chem ext

Mill Supt: Roy Boatcap

**REALTY CO, THE**

937 U S Nat'l Bank Bldg., Denver 2  
 Pres & Gen Mgr: Chandler Weaver  
 VP: Ray & Bonnett  
 Sec: T. M. Dixon

**CALHOUN GROUP, WOOD, BEZANT MINES**, Box 106, Central City, 1 1/2 mi SW of Central City, Gilpin Co., undergr., As, Ag, Cu, Pb, U

Mine Foreman: Henry Ross

Under devel

(See Utah)

**RESURRECTION MINING CO**

Box 534, Leadville  
 Ch of Bd: Fred Searle, Jr.  
 Pres: Plato Malorevoff  
 Gen Mgr: B. B. Greenlee  
 Asst Mgr: A. M. Mackay  
 Metall: J. B. Saunders  
 Elec Engr: J. T. Keadricks  
 Sec: W. F. Schmidt  
 Genl: G. W. H. Norman  
 Purch Agt: F. R. Bockstey  
**600-TON FLOT MILL**, Leadville  
 Mill Supt: A. M. Mackay  
 Mill Foreman: Adolph Kees, Sr

**RESURRECTION #2 MINE**

Oper: Jones Lead & Zinc Mines Co., which see  
 (See Newmont Mng Corp., N.Y.)

**REVENUE MINES**

**Curay**  
 Mgr: M. Campbell Dunn  
**REVENUE MINE**, 6 1/2 mi SW of Curay, Zn, Pb, Ag, Au, undergr

**REYNOLDS MNG CORP**

Poocha Springs  
**MINE**, ungd & surf, fluorapat  
 MILL  
 (See Ark., Va)

**RHINE, A R**

2550 Yarrow St., Denver  
**GENERAL TELLER MINE**, Montezuma, Pb, Zn

**RICO ARGENTINE MNG CO**

Rico  
 Pres & Gen Mgr: S. B. Hinchley  
 Gen Supt: J. J. Searley  
 Geol: Hugh Olmstead  
 Mine Foreman: Paul Jones  
 Mine Engr: R. Lober  
**ARGENTINE & MT SPRINGS MINES**, near Rico, undergr., Pb, Zn, Ag, Cu, Au, iron pyrites  
 Prod: 140 tons  
**140-TON FLOT MILL**, Rico  
 Supt: C. W. Dahlberg  
 Assay: C. H. Tuller  
**SULPHURIC ACID PL**, under constr  
 (See Utah)

**ROBERTS & CO**

Leadville  
**DOLLY B LEASE**, Lake Co  
 Prod: 150 tons monthly

**ROBUSH, JOHN & CO**

Cripple Creek  
 Oper: John & Earl Robush  
**EL PASO MINE**, Teller Co

**ROCKY MOUNTAIN EXPLOIT CO**

302 Kittredge Bldg., Denver  
 Pres: C. O. Nile  
 VP: Wiley L. Moore, Jr.  
 Sec: C. Taylor Cole

**SABRE URANIUM CORP**

Box 1549, Grand Junction  
 Pres: Hugh M. Craigie  
 VP: Clyde E. Collins  
 Sec: Chas. C. Green, Jr.  
 Treas: W. R. Montgomery  
**URANIUM PROPERTIES**, Bull Canyon dist, Montrose & San Miguel counties  
 (See New Mex., Utah)

**ST LOUIS LEASE PARTNERSHIP**

c/o Joseph Keran, Leadville  
**ST LOUIS MINE**, Lake Co  
 Idls

**ST REGIS URANIUM CORP**

2233 S Jackson  
 Pres: E. B. Brannan  
 VP: Tom Kassie  
 Sec: T. K. Brannan  
 Treas: Clyde Wright  
 Geol: D. Hillis  
**LORE PINE & DOROTHY "E" MINES**, undergr., open pit, U<sub>3</sub>O<sub>8</sub>, V  
 Flotation  
 Gen Mgr: Clyde Wright  
 Mine Foreman: Gene Westwood  
 Undergr & open pit prod

**SALLY BARBER MNG CO**

Gen Mgr: Mike Vincon  
 Asst Mgr: Pat Vincon  
**CHAUTAUQUA MINE**, 1 1/2 mi SW of Monte uma, undergr., Pb, Ag, Cu

Prod: 20 tons

Mine Supt: Fred Harris

Mine Engr: Bill Kelsey

**60-TON FLOT MILL**, Montezuma

Mill Supt: Mike Vincon

499 1/2: W. H. Smith

**SCHWARTZWADLER, FRED**

207 Boyd Bldg., Golden

**BALSTON CREEK MINE**, Jefferson Co., pitchblende

**SHATTUCK-DENN MNG CO**

Box 672, Ureva  
 Gen Mgr: Thomas W. Howell  
 Gen Supt: Frank W. Garrett  
**MINE**, undergr., U<sub>3</sub>O<sub>8</sub>, V  
 Undergr prod  
 (See Ari., New Mex., N.Y.)

**SHEMADOAN-DIVES MNG CO**

Silverton  
Res Mgr: Edwin A Larson  
MINE, 9 mi E of Silverton,  
undergr., Pb, Zn, Cu, Au, Ag  
Mine Supt: John Holmgren  
Under devel  
750-TON GRAY-FLOT MILL  
2 mi from Silverton  
Idle

**SIERRA ANCHA MNG CO**

740 Main St, Grand Junction  
(See Ariz.)

**SILVER DAY MINES, INC**

Silverton  
BLACK HAWK, OCCIDENTAL &  
BULLION KING MINES, San Juan Co  
Idle

**SILVER BELL MINES CO**

633 U S Nat'l Bank Bldg, Denver  
Pres & Gen Mgr: E H Sanders  
VP: E J Nord  
Sec-Treas: J A Power  
SILVER BELL & CARBONERO  
MINE, Ag, Pb, WO<sub>3</sub>, Zn, undergr.  
Ophir  
Cons Eng: C R Willey  
Mine Supt: A A Smith  
150-TON FLOT MILL, at mine

**SILVER SHIELD MNG & MLO CO**

765 Newhouse Bldg, Salt Lake  
City 1, Utah  
Pres: Mary Kyto Ellsworth  
VP & Gen Mgr: L E Stein  
Sec: Samuel Bernstein  
Gen Supt: Phil W Page  
MINE, Box 5, Ouray  
250-TON CUSTOM FLOT MILL

**J R SIMPLOT CO, COLO**

DIV  
Grand Junction  
Mgr: Cole Oper: P T Peterson  
Geol: R T Zitting  
URANIUM EXPLOR  
(See Idah, Utah)

**SIMPSON MNG CO**

302 Main St, Grand Junction  
URANIUM EXPLOR

**SKALLA, A F**

Uranium  
Gen Mgr: A F Skalla  
MONOGRAM MINE, 30 mi S of  
Uranium, undergr., U, V  
Foreman: J R Skalla  
PAWN SPRINGS MINE #9 & 12,  
undergr., U, V  
Under devel  
ANNA MAY & DOG TAIL MINES,  
Montrose Co, U

**SKIDMORE MNG CO**

Box 312, Dove Creek  
Pres: T H Skidmore  
VP: G H Skidmore  
Sec: H S Pack  
Purch Agt: Wm J Plank  
LEGION GP, undergr., U<sub>3</sub>O<sub>8</sub>, V  
Mine Supt: Chess Almond  
Asst Mine Supt: A L Skidmore  
Eng: D E Harrison  
(See New Mex)

**SLAGTER EXPLORATION CO**

9 Main St, Evansville, Ind  
MINE, Box 343, Dove Creek, 15 mi  
SW of Dove Cr  
Mine Supt & Purch Agt: Wm Barboe

**SMITH & RUGG**

Nederland  
RAMBLER MINE, Boulder Co, WO<sub>3</sub>

**SPRAY, EDWIN C**

1537 Washington St, Denver 3  
SWEET HOME MINE, Alma,  
Ag, Cu, Pb, Zn  
Idle

**STAMINA MNG & MLO CO**

Hillside  
Pres & Gen Mgr: W B Purch, Jr  
VP: T Lee Withler  
Sec: Harwell E Porch  
Gen Supt: Edwin A Porch  
Geol: Linn Vitey, P Toulmin  
MINE, 7 mi SW of Hillside, undergr., Au, Ag, Cu  
Mine Supt: Edwin A Porch  
Asst Supt: Ed Stacy  
Idle  
100-TON FLOT MILL

**STRATEGIC MIN EXPLOR CO**

Box 392, Grand Junction  
URANIUM EXPLOR

**STRATTON CRIPPLE CREEK**

MNG & DEVIL CO  
Box 178, Colorado Springs  
Pres: D P Strickler  
VP: C W Chamberlain  
Sec-Treas: H L Stubbs  
MINE  
Idle

**STURM MINING CO**

Rt 12, Box 2534, Grand Junction  
Pres & Gen Mgr: Fred Sturm  
VP & Purch Agt: Leona Sturm  
Sec-Treas: Don R Sturm  
Mech Engr: Wesley Sturm  
Safety Engr: Lewis Sturm  
ELIZABETH GROUP, Mesa Creek,  
84 mi SW of Grand Junction,  
surface, U, V  
Under devel

**TALL TIMBER MNG CO**

c/o L R Hixman, 909 Grant St,  
Denver  
MINE, near Indian Hills, feldspar,  
Be, mica

**TELLURIDE MINES, INC**

Telluride  
Gen Mgr: John S Wise  
Eng in charge: A C Hilder  
Mine Foreman: John Kearby  
MINE, undergr., Au, Ag, Pb, Zn  
Under devel  
FLOT MILL, at mine  
Mill Foreman: R C Stevens

**THORNBURG URANIUM**

MINES, INC  
160 W Main St, Grand Junction  
Pres: Vance Thornburg  
VP-Sec: Garth Thornburg  
LOS OCHO PROP, Gunnison Co,  
U<sub>3</sub>O<sub>8</sub>  
Producing  
(See Ariz.)

**THREE STATES URANIUM**

CORP  
354 Main St, Grand Junction  
Pres: Kenneth H Huston  
VP: C H Moslander, Jr  
Sec-Treas: Homer Dale

**TREASURE MOUNTAIN**

GOLD MNG CO  
202 Midland Savings Bldg, Denver 2  
Pres: Guy L V Emerson  
Sec: A W Fischer  
SANTIAGO, SAN JUAN, QUEEN,  
COLDEN FLEECE & SCOTIA MINES,  
11 mi NW of Silverton, undergr., Au,  
Ag, Pb, Zn, Mn  
Under devel

**TYONE MINING CO**

Box 488, Idaho Springs  
Partners: Boeris, Smith & Fencil  
TYONE MINE, Clear Cr,  
Supt: W D Fencil  
Assy: George Treder  
Under devel

**UKELE, JOHN**

Gateway  
BLACK MAMMY MINE, Mesa Co,  
U<sub>3</sub>O<sub>8</sub>

**UNCOMPAGNE URANIUM,**

INC  
Box 114, Grand Junction  
Pres: John Gaskill  
VP: Ken Weaver, Don Malloch  
Sec-Treas: Roland Williams  
HIGHLANDER MINE, undergr.,  
U<sub>3</sub>O<sub>8</sub>, Pb, Ag, Au  
Idaho Springs  
Gen Mgr: Don Malloch & Ken Weaver  
Gen Supt: Paul Ruiter  
Asst Mine Supt: Bill Kushner  
50-TON GRAY MILL, at mine  
Mill Supt: Karl Prahee  
Asst Mill Supt: Dale Malloch

**UNITED CANADIAN URANIUM**

CORP  
Denver  
Pres: Harry M Frost  
Ch Eng: James R Fyfe  
YELLOWSTONE URANIUM CL,  
Black Rock dist, Montrose Co, U<sub>3</sub>O<sub>8</sub>  
Under devel  
MONTKIRK URANIUM GP, lower  
Black Rock dist, Montrose Co, U<sub>3</sub>O<sub>8</sub>  
(See Nev)

**UNITED EMPIRE GOLD**

MINES & UNITED MINES CO  
15 Citizens Nat'l Bank Bldg,  
Boulder  
AMERICAN MINE, Au, Ag, Cu,  
Pb, Zn  
Idle

**UNITED GOLD MINES CO**

Box 187, Cripple Creek  
Pres: M E Shoup  
VP & Gen Mgr: Max W Bowen  
Gen Supt: C B Carlton  
VINDICATOR & PORTLAND MINES,  
Victor, undergr., Au, Ag

**U S GYPSUM CO**

Loveland  
GYPSUM MINE, open-quarry,  
gypsum  
Wks Mgr: J R Miner  
(See Calif, Conn, Ill, Iowa, Mich,  
Mont, New Mex, Nev, Okla, Tex,  
Utah, Va, Wash)

**U S LITHIUM CO**

Gunnison  
BROWN HERBY MINE, LA  
MILL, 26 mi from Gunnison

**U S METALS CORP**

208 Mercantile Bldg, Denver  
Pres: W A Fack  
Sec: Carl H Peterson  
Purch Agt: Alfred O Brehmer  
HENRIETTA MINE, 7 1/2 mi N of  
Silverton, undergr., Pb, Ag, Zn,  
Cu, Au  
Idle

**U S VANADIUM CO, A DIV**

OF UNION CARBIDE &  
CARBON CORP  
Box 1168, Grand Junction  
Gen Supt: A Q Lundquist  
Supt of Plants: J F Brenton  
Mgr: Mines: E M Paris  
MINES, Montrose, Mesa & San  
Miguel Co, undergr., open pit,  
U<sub>3</sub>O<sub>8</sub>, V  
Uranium  
Supt, Mines: S E Blamey  
Geol: J E Motica  
Eng: A W Goring  
Prod: A L Carver  
Explor: J R Borden  
MILL  
Rifts  
Pl Supt: H C Peterson  
Mill Foreman: M M Brennan  
MILL  
Uranium  
Pl Supt: R D Van Zante  
Asst Supt: K W Lente  
(See Calif, N Y, Nev, Utah)

**URANIUM CORP OF COLO**

129 E 60th St, New York City  
Pres: W S Moore  
VP: Harold B Dow  
Sec: John G Hein  
URANIUM EXPLOR, Colorado  
Plateaus  
(See N Y)

**URANIUM DEVEL CORP**

Golden  
Mgr: Paul Keating  
URANIUM EXPLOR

**URANIUM EXPLORERS**

SYNDICATE  
424 Lafayette St, Denver  
Gen Mgr: J Broadfield  
URANITE, CORVUSITE claims  
in Mesa and San Miguel counties  
Under devel

**URANIUM METALS, INC**

Egnar  
FALCON URANIUM MINE, Bishop  
Canyon, Montrose County  
Ch Eng: Dr A A Zangara  
Under devel

**URANIUM PRODUCERS, INC**

Egnar  
Mgr: Harry E Coppins  
URANIUM MINE, Black Rock dist,  
Montrose Co

**URANIUM PROSPECTORS**

CO, LTD  
718 N S, Grand Junction  
URANIUM EXPLOR

**UTZE LODE CO**

Box 585, Salida  
Treas: Harold R Keeler  
MADONNA MINE, Au, Ag, Cu, Pb,  
Zn  
Under devel

**VANADIUM CORP OF AMER**

Box 761, Durango  
VP & Gen Mgr: D W Vilne  
Purch Agt: John Blackburn  
MINES, scattered over 200 square-  
mile area, undergr & surface, U, V  
Dir, Plateau Oper: Page Edwards

Mine Supt: R L Anderson  
Explor Super: E B Daggett  
Mng Engrs: W F Edwards,  
Harry Jessing  
ROAST LEACH, Ft, Durango  
Mill Supt: John A Maxwell  
Asst Supt: R G Vesper  
Gen Master Mech: Troy Newland  
ROAST LEACH PL, Naturita  
Gen Supt: W L Anderson  
Mill Supt: L E Daniels  
(See Ariz, New Mex, N Y, Utah)

**VENTURE LEASING COMPANY**

Silverton  
COLD PRICE MINE, 17 mi N of  
Silverton, undergr., Pb, Zn, Cu,  
Au, Ag  
50-TON FLOT MILL, Portal

**VILLA GROVE TURQUOISE**

MINE  
Villa Grove  
LODE, Saguache Co, Turquoise

**VOLTRON CORP**

104 W Road Ave, Grand Junction  
Pres: H Evan Roberts  
Sec: Beavertown Plowman  
Gen Mgr: John P Kellogg  
Ch Geol: Robert Redmond  
Field Super: Walter Castro,  
Leon Jaynes  
URANIUM EXPLOR  
WAN CHANG CORP  
Box 441, Boulder  
50-TON GRAY MILL  
Sugar Loaf Road, Boulder  
Rep in charge: Y H Huang  
(See Calif, Nev)

**WALKER, ART R**

Silverton  
QUEEN ANN MINE, San Juan Co  
Under devel

**WALTE, BEN & HEWITT,**

KEN  
Rt 2, Box 7, Morrison  
BEGGAR MINE, near Tiencow,  
feldspar, Be, Cu, Zn, B

**WEEMS & WEAVER MNG CO**

Box 208, Salida  
ANTORO MINE, Box 387, Salida,  
undergr., Au, Ag, Pb, Zn, Cu  
(Leased to W E & S E Burleson)  
Idle

**WELLS, LEO O**

Rt 1, Box 1650, Escudido,  
Calif  
MANERVA MINE, Summit Co,  
Pb, Zn, Ag  
Under devel

**WESTERN FELDSPAR MLO**

CO  
Box 671, Salida  
Sec-Treas: J W Magnuson  
PLANT, near Salida, feldspar

**WESTERN GOLD MINES, INC**

Crown King, Ariz  
Pres: Elias P Silverman  
MINE, Rito Seco property,  
Costilla Co, Au  
Under devel

**WILLIAMS MINING CO**

Norwood  
URANIUM EXPLOR

**WILLMARTH MINES**

Georgetown  
WILLMARTH SILVER & LEAD  
MINES, 2 mi S of Bakerville, Pb,  
Au, Ag, Zn  
Idle

**WORCESTER MINES**

1501 White Ave, Grand Junction  
MINE, near Uranium, undergr.,  
U<sub>3</sub>O<sub>8</sub>, V  
Mng Partner: John W Hill  
Contractor: Glenn L Zastrow

**WRIGHT BROTHERS**

Uranium  
PROD CLAIM, Uranium area, U  
Idle  
(Leased to U S Vanadium)

**WRIGHT, WARREN**

Rt 4, Grand Junction  
MINE, 65 mi SW of Grand Junction,  
undergr., U, V  
Under devel



**ZIMMERSON, BEN**  
1805 Main St., Grand Junction  
BELLAMONT #1 MINE, Mesa Co.,  
U. V.  
**ZODOMOK MINES, INC**  
Box 483, Durango  
Pres & Purch Agt: Albert Zofall  
VP: Karle S Goff  
Sec & Gen Supt: Don Delucchi  
DENISE O MINE, undergr., Va. Ag  
30-TON GRAY MILL  
Mill Supt: Karle S Goff

## CONNECTICUT

**U S GYPSUM CO**  
Pella Village  
MINE, surface, limestone  
(See Calif., Colo., Ill., Iowa, Mass.,  
Mich., Mont., Nev., N. Y., Tex.,  
Utah, Wash.)

## DELAWARE

**DU PONT de REMOURS,  
E I & CO**  
Pigments Dept., 1007 Market St.,  
Wilmington  
(See Humphreys Gold Corp., Fla.)

**OSARK-MARION CO.,  
MNG DIV**  
Box 1033, Wilmington  
FLUORSPAR FILTER CAKE  
DRYING PL.  
Supt: W W Kuster  
(See Colo., Ill., Ohio)

**ST LAWRENCE FLUORSPAR,  
INC**  
130 Broadway, N. Y., NY  
200-TON FLOT MILL  
Wilmington

## FLORIDA

**AMERICAN AGRI CHEM CO**  
Plant  
PEBBLE MINE, phosphate rock  
BOVETTE MINE, phosphate  
TRACT #10 MINE  
(See N. Y.)

**AMERICAN CYANAMID CO**  
BAGGLEY CR. MINE, Newwater  
surface, phosphate rock  
3,000-TON FLOT MILL, washer  
SYDNEY MINE, Newwater, surface,  
phosphate rock  
2,000-TON FLOT PL., washer  
Mgt: Arthur Crago  
(See Ark., N. Y., Va.)

**CORONET PHOSPHATE CO,  
A DIV OF SMITH-DOUGLASS  
CO, INC**

Box 768, Plant City  
Gen Mgr: R M Wilbur  
Gen Supt: W H Taylor  
Dir, Research: W B Fort  
OPEN PIT MINE, phosphate rock  
Prod: 2,000 tons  
(See Va.)

**DAVISON CHEM CORP**  
FLORIDA PHOSPHATE DIV

Box 471, Bartow  
Div Mgr: A T Cole  
Asst Div Mgr: J M Harris  
Purch Agt: W W Thornton  
Mgr, Prod Plng: J L Huster  
Prod Supt: W B Fort  
Gen Mines Supt: B P Jones  
Maint Supt: E J Purcell  
Ch Engr: A J Frost  
Ch Chem: C D McDowell  
Safety Engr: J R Terry  
Met: I P Weaver  
Elec Eng: W R Hillman  
PAUWAY #4 MINE, Bartow, surf.,  
phosphate  
Supt: F H Elliot  
BONNY LAKE MINE, Bartow,  
surface, phosphate  
Supt: W A Allen

**1,100-TON FLOT MILL**  
Kiddaway  
Mill Supt: C B Stodd  
ROTARY KILN & DRYERS  
(See Md.)

**FLORIDA ORE PROCESSING  
CO**

Box 417, Methuen  
Pres & Gen Mgr: Frederick A Hauck  
VP: Robt L Holland  
Asst to Pres: Albert E Cragan,  
O D Slaughter  
Sec: Vincent H Beckman  
Gen Supt: Herman Koepfel  
MINE, Bradford Co., surface, rutile,  
ilmenite, -titan, garnet, monazite  
Prod: 30 tons  
40-TON GRAY MILL

**FLORIDIN CO**

Tallahassee  
MINES, Quincy & Jamieson,  
surface, fuller's earth  
MILLS

**HUMPHREYS GOLD CORP**  
1st Nat'l Bank Bldg., Denver, Colo  
THAIL RIDGE PLANT  
P O Dr 831, Starke  
Gen Mgr: E C Welch, Jr  
Gen Supt: W J Stipelle  
Met: J C Detweiler  
MINE, open pit, ilmenite, Zr,  
staurolite  
Mine Supt: G R Mathews  
Mine Eng: E V Whittle  
23,000-TON GRAY MILL, mag sep.,  
at Trail Ridge Pt  
HIGHLAND PLANT  
P O Dr A, Lawley  
VP: J P Wood  
Gen Mgr: E C Weichel, Jr  
Gen Supt: E S Beebe  
MINE, ilmenite  
JACKSONVILLE PL., Box 5-02,  
Jacksonville 7, 6 mi E of Jackson-  
ville, placer, ilmenite, rutile,  
aluminum, monazite  
Prod: 8,000 tons  
Pl Mgr: Frank M McKinley  
Gen Supt: Homer Lewis  
Asst Gen Supt: A D Whisler  
Engr: Jack Ellidge  
Comp: B L Jackson  
8,000-TON GRAY MILL, dry elec  
high-tension & magnet cones  
(See Colo.)

**HOWARD PHOSPHATE CO**  
Box 3028, Orlando  
Gen Mgr: R M Howard  
MINE, Inverness, surface,  
300-ton bucket dredge, soft,  
colloidal & hard phosphate  
Mine & Mill Supt: W E Marlow  
**INTERNATL MIN & CHEM  
CORP**  
PHOSPHATE MIN DIV  
Bartow  
PHOSPHATE MINES  
Mgr: P H Bowen  
Asst Mgr, Prod: E T Casler  
Asst Mgr, Eng: H T Fisher, Jr  
(See Ari., Colo., Ill., Miss., New  
Mex., N. Dak., Ohio, S. Dak., Tenn.,  
Va.)

**KELLOGG CO**  
310 Franklin St., Ocala  
PHOSPHATE MINE  
**KIBLER-CAMP PHOSPHATE  
ENTERPRISE**  
Ocala  
Gen Mgr: D B Kibler, Jr  
SEC IT MINE, Dunnellon, surface,  
hard rock phosphate

**LOWCALA PHOSPHATE CO**  
Box 138, High Springs  
PHOSPHATE MINE  
**RUTILE MNG CO OF  
FLORIDA**  
111 Broadway, N. Y. 8, N. Y.  
Prod: Chas C Morris, Jr  
VP: John Hess  
Sec: A J Drexel Fend, Jr  
Treas: Peter E Connell  
JACKSONVILLE MINE, open pit,  
rutile, ilmenite, Zr  
South Jacksonville  
Prod: 60,000 tons per yr

**SEA BOARD PHOSPHATE CO**  
Dunnellon  
PHOSPHATE MINE

**SOIL BUILDERS, INC**  
Dunnellon  
PHOSPHATE MINE

**500-TON FLOT MILL**  
Kiddaway  
Mill Supt: C B Stodd  
ROTARY KILN & DRYERS  
(See Md.)

**FLORIDA ORE PROCESSING  
CO**  
Box 417, Methuen  
Pres & Gen Mgr: Frederick A Hauck  
VP: Robt L Holland  
Asst to Pres: Albert E Cragan,  
O D Slaughter  
Sec: Vincent H Beckman  
Gen Supt: Herman Koepfel  
MINE, Bradford Co., surface, rutile,  
ilmenite, -titan, garnet, monazite  
Prod: 30 tons  
40-TON GRAY MILL

**FLORIDIN CO**  
Tallahassee  
MINES, Quincy & Jamieson,  
surface, fuller's earth  
MILLS

**HUMPHREYS GOLD CORP**  
1st Nat'l Bank Bldg., Denver, Colo  
THAIL RIDGE PLANT  
P O Dr 831, Starke  
Gen Mgr: E C Welch, Jr  
Gen Supt: W J Stipelle  
Met: J C Detweiler  
MINE, open pit, ilmenite, Zr,  
staurolite  
Mine Supt: G R Mathews  
Mine Eng: E V Whittle  
23,000-TON GRAY MILL, mag sep.,  
at Trail Ridge Pt  
HIGHLAND PLANT  
P O Dr A, Lawley  
VP: J P Wood  
Gen Mgr: E C Weichel, Jr  
Gen Supt: E S Beebe  
MINE, ilmenite  
JACKSONVILLE PL., Box 5-02,  
Jacksonville 7, 6 mi E of Jackson-  
ville, placer, ilmenite, rutile,  
aluminum, monazite  
Prod: 8,000 tons  
Pl Mgr: Frank M McKinley  
Gen Supt: Homer Lewis  
Asst Gen Supt: A D Whisler  
Engr: Jack Ellidge  
Comp: B L Jackson  
8,000-TON GRAY MILL, dry elec  
high-tension & magnet cones  
(See Colo.)

**SUPERIOR PHOSPHATE CO**  
Box 478, Dunnellon  
PHOSPHATE MINE

**SWIFT & CO**  
Bartow  
Gen Mgr: Howard P Gould  
Gen Supt: O D Bowers  
Mech Eng: W B Hunt  
Elec Eng: H K Young  
Mine Supt: J B Grant  
WATSON MINE, open pit, phosphate  
Asst Mine Supt: E E McKinney  
VARN MINE, open pit, phosphate  
Asst Mine Supt: C W Justice

**VICTOR CHEMICAL WORKS**  
Tarpon Springs  
ELEMENTAL PHOSPHATE PLANT  
(See Calif., Ill., Mont.)

**VIRGINIA-CAROLINA CHEM  
CORP**

Nichols  
FLORIDA MNG DEPT., phosphate  
Mgt: H L Pascoe  
10,000-TON FLOT MILL  
(See Tenn., Va.)

## GEORGIA

**AMERICAN CYANAMID CO**

West Bldg., Rome  
Mgr: A W Montgomery  
BAVITE MINE  
Barensley Gardens  
IAN McMICHAEL MINE  
Andersonville  
MATTON-THOMPEN MINE  
Andersonville  
FOUNTAIN MINE  
Irwin  
(See Ark., Fla., N. Y., Va.)

**APPALACHIAN FELDSPAR  
CO**  
Box 358, Monticello  
Owner: Pacific Tin Consolidated  
FELDSPAR MINE  
(See Pacific Tin Consolidated,  
N. C., Tenn.)

**ARRINGTON MINING CO**  
Box 115, Cedartown  
Pres: C B Arrington  
IRON MINE

**BARTOW MINES, INC**  
Cartersville  
Owner: Geo Harpshire  
IRON MINE  
Ashby

**COBUTTA TALC CO, THE**  
Drawer M3, Dalton  
Pres: L F Starr  
VP: L B Farrar  
Gen Mgr: Tremmell Starr  
Sec: S A Farrar  
PORT MINE, 7 mi E of Chatsworth,  
undergr., talc & soapstone  
MILLS, Chatsworth

**GAMMAGE MINING CO**  
Cedartown  
Pres: E L Gammage  
IRON MINE

**GEORGIA TALC CO**

Chatsworth  
Pres: M W Glenn  
VP: S W Rolf  
Gen Mgr: F T Glenn  
Purch Agt: Fred Long  
SBOP TUNNEL, 3 mi E of  
Chatsworth, talc, soapstone  
Prod: 200 tons  
Mine Supt: Garvin Swanson  
350-TON MILL, Chatsworth  
Mill Supt: James Johnston  
Mill Foreman: Walt Weaver

**GRAVES-ACREE MNG CO**  
Cedartown  
MINE, 3 mi W of Cedartown, Fe  
Prod: 200 tons  
GRAY MILL

**HODGE MINING CO**  
118 W Cherokee Ave., Cartersville  
Owner: J W Hodge  
Sec: M T Shaw  
HODGE MINE, 14 mi W of Carters-  
ville, Fe  
Prod: 875 tons  
Supt: Clyde Shaw  
MINE, Bartow Co., surface, Fe

**MARCY EXPLOR & MNG  
CO, INC**  
203 E Paces Ferry Rd., Atlanta  
(See Colo.)

**PACIFIC TIN CONSOL**  
(See Appalachian Feldspar Co.)

**THOMPSON-WEINMAN & CO**  
Cartersville  
Gen Mgr: W N Bradley  
BARITE MINE

## IDAHO

**AMERICAN SILVER MNG CO**  
123 W 4th Ave., Spokane, Wash.  
Pres: E W Conrad  
VP: J M Henneck  
Sec-Treas: L B Conrad  
Purch Agt: C C Conrad  
MINE, 1 mi S of Odegar, undergr.,  
Cu, Au  
Under devel by Polaris Mng Co

**AMERICAN SMELTING &  
REFINING CO, N W MNG  
DEPT**

Box 440, Wallace  
Gen Mgr: J E Berg  
Asst Mgr: J C Kierfer  
Supt of Mines: W J Coombe  
Supt of Mills: G S Price  
Mech, Elec Supt: W A Boyer  
Purch Agt: P L White  
PAGE MINE, Pb, Zn, Ag  
Supt: T M Tower  
Asst Supt: C J Ward  
MORNING MINE, Pb, Zn, Ag  
Mine Supt: H H Shook  
Prod: 200 tons  
1,200-TON MILL, concentrator  
Mill Supt: G S Price  
FRISCO MINE, Pb, Zn, Ag  
Supt: G B Christian  
Prod: 250 tons  
JACK WAITE MINE, Duane,  
undergr., Pb, Zn, Ag  
Supt: C H Blackwell  
(Operated under agreement with  
Jack Waite Mining Co.)  
CALENA UNIT, 3 mi W of Wallace,  
undergr., Ag, Pb  
Supt: Norman Vissnes  
Under devel  
(See Vulcan & Callahan Zinc-Lead)  
(See Ari., Calif., Colo., Kans., Mo.,  
Mont., Nev., New Mex., N. Y., Ohio,  
Tex., Utah, Wash.)

**ANACONDA COPPER MNG CO**  
Conda  
VP: Chg West Oper: C H Steele  
Gen Mgr, West Mng Oper: A C  
Bigley  
MINE, Conda, phosphate rock,  
undergr. & open pit  
Supt: L E Trager  
Foreman: W J Dorell  
550-TON CRUSHING & DRYING PL.  
SUNSET GROUP, Wallace, Beaver  
& Summit dist., Pb, Ag, Zn, (under  
lease)  
(See Calif., Mont., Nev., New Mex.,  
N. Y., Utah)

**ANCHOR GROUP**  
Kellogg  
Opr: Frank McKinley  
MINE, Summit dist., Shoshone Co.,  
Ag, Cu, Pb, Zn  
Under devel

**AUXER GOLD MINES, THE**  
Sund Point  
Pres: Leland C Johnson  
VP & Gen Mgr: James Campbell  
Sec: A R Nelson  
AUXER MINE, 7 mi NE of Hope,  
undergr., Au, Ag  
Under devel  
BOSTON GROUP, Bonner Co.  
Pend d'Oreille dist., Au, Ag  
18th

**BANNER-IDAHO MINES, INC**  
Scott Bldg., Wallace  
Pres: John Davis  
VP: C W Bentley  
Sec-Treas: J W Courmeth

**BAUMHOFF-MARSHALL CO**  
Big Creek, Cascade Valley  
Pres: Fred Baumhoff  
Dr Master: Jack Fischer  
S-CURB-FOOT DREDGE, Bg Cr.,  
Cascade Valley, monazite,



Prod: 5,000 cu yds of monarite-bearing sand per day  
**MAGNETIC SEP PL.**, Boise, monarite, Zr, H, garnet  
 Supt: Albert H Whitten  
 Account: Gran Eymann

#### BAYHORSE MINE, INC

Challis  
 Pres: O J Salisbury  
 VP & Gen Mgr: W B Swigert  
 Sec-Treas: O O Langness  
**PACIFIC, BEARDSLEY, RAMBORN, & FOREST ROSE GROUPS**, 15 mi SW of Challis, undergr., Pb, Ag, Zn, Cu, Au  
**100-TON GRAY FLOT MILL**, Bajharus

#### BEHRERS BROS

Elk City  
 Mgr: W T Behrens  
**LITTLE MOOSE CR PL.**, Elk City dist, Idaho Co, Au, Ag  
 Under devel

#### BELL, DAVID E

Mackay  
**ALURA, McPADDEN & YANKEE FORK MINES**, Custer Co, Ag, Pb, Zn, Undergr  
 Under devel

#### BENTON MINE

Durke  
 Oper: A E Toft  
**MINE**, Lolo dist, Shoshone Co, Ag, Pb, Zn  
 Under devel

#### BEVAN, MAGNUS

North Fork  
 Gen Mgr: Magnus Bevan  
 Sec: Hazel Bevan  
**SAWLOG GROUP**, 36 mi S of Salmon City, undergr & surface, Au  
 Under devel  
**5-TON GRAY MILL**

#### BIG EIGHT MINING CO

2315 Fairview Ave Boise  
 Pres & Mine Supt: A A Creech  
 1st VP & Asst Mine Supt: C W Creech  
 Sec: Dale W Chamberlain  
 Treas: Pete Kotaskie  
**MINE**, open pit & undergr, U<sub>2</sub>O<sub>8</sub>, WO<sub>3</sub>, Ti, V  
 Under devel

#### BIG FOUR MINE

Riggins  
 Oper: Scott & Howard Williams  
**MINE**, Florence & French Cr Dist, Idaho Co, Au, Ag  
 Under devel

#### BIG IT MINE

Lessons, Elberton & Schmittroth, Smelterville  
 Under devel

#### BLACK BEAR MINES CO

Wallace  
 Pres: W H Hanson  
**BLACK BEAR GROUP**, near Gem, 3 mi S of Wallace, Pb, Zn, Ag (Leased to G W Ringel)  
 Under devel

#### BRADLEY MINING CO

Bradley Field, Boise  
 Exec VP: John D Bradley  
**YELLOW PINE MINE**, Sublette undergr & open pit, WO<sub>3</sub>, Sb, Au, Ag  
 Under devel

Gen Mgr: R F Mahoney  
 Asst Gen Mgr & Geol: K G Wallace  
 Met: R J McRae  
 Mine Supt: Edwin Adams  
 Equip Supt: G R Hansen  
 Chief Clerk: Arnold Souders  
**3,400-TON FLOT MILL**  
**YELLOW PINE SMELTER**  
 Met Chem: Leon Hartz  
**IMA MINE**, Patterson, undergr, WO<sub>3</sub>, Ag, Cu, Pb  
 Gen Mgr: C C Hathorn  
 Geol: Jack L Fletcher  
 Mine Supt: Clark C Collins  
 Mech Supt: J A Miller  
 Chief Clerk: F F Pope  
**185-TON GRAY-FLOT MILL**, Patterson  
 Mill Supt: G N McCall  
 (See Calif)

#### BROUEN, FRED J

Salmon  
**POPE-SHERMAN MINE**, Cu  
 Idaho

#### BUNKER CHANCE MNG CO

Box 808, Kellogg  
 Pres: T L Hume  
 VP: Ted Schindler  
**MINE**, 7 mi S of Kellogg, undergr, Ag, Pb, Cu  
 Under devel

#### BUNKER HILL & SULLIVAN MNG & CONG CO

Box 39, Kellogg  
 Chmn of Bd: S A Eastman  
 Pres: J B Hatfield  
 Exec VP: J D Bradley  
 Gen Mgr: P C Peddersen  
 Elec Engr: LeVern Griffith  
 Geol: Roger McConnell  
 Mech Engr: V M Yang  
 Safety Engr: J T Williams  
 Asst Sec: Ira A Robson  
 Purch Agt: E P Blott  
**MINE**, Kellogg, undergr, Ag, Pb, Zn  
 Supt: R S Hooper  
 Asst Supt: Joe Gordon  
 Foreman: Paul Sloan  
 Foreman: Ted Olds  
 Engr: Austin Parks  
 Prod: 1,300 tons  
**3,000-TON FLOT MILL**  
 Supt: C Y Garber  
 Asst Supt: A F Kroll  
 Foreman: R F Roland  
 Assay: I H Leskey  
**SMELTER & 400-TON FUMING PL.**, Kellogg  
 Supt: Harold Lee  
 Asst Supt: George Dunn

#### CALERA MINING CO, BLACKBIRD DIV

Cuba  
 Pres: H H Sharp  
 Chief Asst: E D Haddon  
 Purch Agt: J W Caples  
**CALERA MINE**, Cobalt, undergr, cobalt, Cu  
 Prod: 500 tons  
 Mgr: E B Douglas  
 Geol: R E Cribbs  
 Mech Engr: J P Smith  
 Elec Engr: Wall Lee  
 Mine Supt: R L Soderberg  
 Mine Foreman: W O Neal  
 Mine Engr: C J Whitley  
**1,000-TON FLOT MILL**  
 Mill Supt: C O Hower  
 Mill Foreman: John Vecchies  
 Assayer: Ted Rogers  
 (See Calera, Utah)

#### CAMAS URANIUM MNG & DEVEL CO, INC

Fairfield  
 Pres: Sterling W Stoker  
 VP: Donald F Vaught  
 Sec-Treas: Lowell Fields  
**20 CLAIMS**, Little Smoky district, Camas Co, Undergr, Au, Ag, Pb, U<sub>2</sub>O<sub>8</sub>  
 Under devel

#### CBS MNG CO

Golden  
**HAYSTACK MINE**, Idaho Co, Au, Ag  
 Under devel

#### CAPITOL SILVER LEAD MNG CO

Georson Bldg, Wallace  
 Pres: H C Mowery  
 VP: Joe Swan  
 Sec-Treas: W A Callaway  
**MINE**, Ag, Pb  
 Under devel

#### CHALLIS VIEW MINE

Challis  
 Owners: Henry & Ella G Smith  
 Lessees: Heisecke Bros et al, Midvale, Utah  
**MINE**, 8 mi W of Challis, Dougherty Gulch, Ag, Pb  
 Idaho

#### CHAMPION MINE

Box 281, Mackay  
 Pres: J L Ausich  
**MINE**, 8 mi S of Mackay, undergr, Pb, Cu, Ag  
 Prod: 15 tons crude

#### CHECKMATE MINE

Boise  
 Orr: Earl Monahan  
**MINE**, West View dist, Gem Co, Au, Ag, Pb, Zn  
 Idaho

#### CIRC TWINS MNG CORP

Orogrande  
 Pres & Gen Mgr: Ross R Brattain, Idaho

7800 SE 32nd Way, Mercer

Island, Wash  
 VP: Ollie H Brattain  
 Sec-Treas: Mari Brattain  
**KNOB HILL MINE** (formerly Pettie Mine), surface, Au, Cu, WO<sub>3</sub>, H<sub>2</sub>O  
**PENMAN PROP**, undergr, Au  
 Idaho

#### CLARK, EDWARD B

Box 131, Clark Fork  
**LUCKY OPAL & SURPRISE GROUPS**, 3 mi NE of Clark Fork, Pb, Zn, H<sub>2</sub>O  
 Idaho  
**GREEN MONARCH LEASE**, Pb, Ag, Zn

#### CLAYTON SILVER MINES

Box 890, Wallace  
 Pres & Gen Mgr: W M Yeaman  
 VP: A H Featherstone  
 Sec: Ray Morrison  
**MINES**, Clayton, undergr, Au, Ag, Cu, Pb, Zn  
 Mine Supt: H E Strong  
 Engr: Norman Smith  
**100-TON FLOT MILL**  
 Mill Supt: Alfred Nelson

#### COEUR D'ALENE MINES CORP

203 Gyle-Taylor Bldg, Wallace  
 Pres: H C Mowery  
 VP: P E Jacobs  
 Sec: W A Callaway  
**MINERAL POINT MINE**, Oroburn, 1 mi S of Oroburn, Ag, Cu, Under devel  
 Oper: Polaris Mag Co  
**400-TON FLOT MILL**

#### COEUR D'ALENE MNG CO

c/o Eugene F McCann, Box 1107, Wallace  
 Pres: T M Reynolds  
**PLACER**, 18 mi N of Wallace, Au  
 Idaho

#### COEUR D'ALENE SILVER GIANT, INC

Box 838, Kellogg  
 Pres & Gen Mgr: Harry G Alway  
 VP: R E Newman  
 Sec-Treas: Wayne A Brannard  
**MINE**, E Fork of Big Cr, Kellogg, Ag, Pb, H<sub>2</sub>O  
 Idaho  
**82 LODGE CLAIMS**, Shoshone Co, under working contract

#### COME BACK MNG CO

Idaho City  
 Pres: C C Fairchild  
 VP: Chas F Adams  
 Gen Mgr & Sec: L F Truger  
**MINE**, 20 mi W of Idaho City, Au, Ag, Pb, Zn, Cu  
 Idaho

#### CONTINENTAL MNG CO

Box 469, Wallace  
 VP: J E McKay  
 Sec-Treas: H F Magnuson  
 Gen Mgr: C E Small

#### COPPER BASIN MINE

Mackay  
 Pres: Claude Heintz  
 Oper: Clinton A Gunderson  
**MINE**, Alder Cr dist, Custer Co, Au, Ag, Cu  
 Idaho

#### COPPER HILL MNG CORP

116 S Birch St, Jerome  
 Sec: Louise M Lindsay  
 Treas: H R O'Harrow  
 Purch Agt: Emmett A Yaden  
**MINE**, Jerome, Au, Ag, Cu  
 Under devel  
 (See Penn)

#### COPPER QUEEN MINE

Salmon  
 Oper: E G Peron  
**MINE**, Mackinaw dist, Lemhi Co, Au, Ag, Cu  
 Owners: Charlie Kapp & Lester Pratt

#### CORDERO MNG CO

Hailey  
**WILD HORSE MINE**, near Mackay, WO<sub>3</sub>  
 Under devel  
**50-TON GRAY MILL**  
 (See Calif)

#### CROOKED RIV PLACERS

c/o Clearwater Dredging Co, Spokane, Wash  
**PLACERS**, Elk City dist, Idaho Co, Au, Ag  
 Idaho

#### CUBA MINING CO

Wallace  
 Pres: W H Hanson  
**MINES**, 3 mi from Wallace, Ag, Pb  
 Idaho

#### DAISY KINGS CLAIMS

Garden Valley  
 Owner: E W Bowman  
**CLAIMS**, Deadwood Basin, Ag, Au, Pb, Cu  
 Idaho

#### DARLAND, JACK A & L A

Cuprum  
**50 PEACOCK MINE**, 48 mi NW of Council, undergr, Cu, Ag, Au  
 Idaho

#### DAVIES, J R & SONS

Boise  
**PRINCESS BLUE RIBBON MINE**, Beaver dist, Camas Co, Ag, Pb  
 Under devel

#### DAY MINES, INC

Box 1090, Wallace  
 Pres & Gen Mgr: Henry L Day  
 Asst Gen Mgr: Rollin Farmer  
 Sec: S F Heitfeld  
 Purch Agt: O T Kelton  
**DAYROCK, TAMARACK, SHERRMAN, HERCULES MINES**, Wallace, Undergr, Pb, Ag, Zn  
 Gen Supt: C E Sparks  
**MONITOR MINE**, Wallace  
 Idaho  
**4 FLOT MILLS**  
 Mill Supt: L A Grant

#### DELMAR MNG & MLG CO

Spokane, Wash  
**DELMAR MINE**, Lemhi Co, Au, Ag  
 Shoup

#### DEVIL'S TOE DREDGING CO

Shoup  
 Pres: A P Smothers  
 Sec: Dave Hansen  
**MINE**, 29 mi W of Shoup, dragline placer, Au, rare earth  
 Idaho

#### DOUGLAS MNG CO

Box 320, Wallace  
 Pres: Stanley A Easton  
 VP: Robert E Sorenson  
 Sec: L E Hill  
**DOUGLAS MINE**, Pine Creek, 13 mi SW of Kellogg, Pb, Zn, Ag  
 Under devel  
 (Devel in coop with Spokane-Idaho Mining Co)

#### DUVALL CO

210 Eccles Bldg, Ogden, Utah  
**VIRGINIA GROUP**, Blackpine dist, Cassia Co, Au, Ag  
 Idaho

#### EAST SILVER BELT LEAD MINES, INC

Box 683, Wallace  
 Pres: R E Sorenson  
 VP: C H Foreman  
 Sec: Elford Enholm  
**MINE**, near Mallan  
 Idaho

#### GOLCONDA LEAD MINES

Box 267, Wallace  
 Pres & Gen Mgr: A H Featherstone  
 VP: J A Featherstone  
 Sec: H F Magnuson  
 Gen Supt & Purch Agt: W W Featherstone  
 Geol: Phil Cooley  
**GOLCONDA MINE**, 1 1/2 mi E of Wallace, undergr, Pb, Ag, Zn  
 Prod: 50 tons  
**255-TON FLOT MILL**, Mallan Rd, Wallace  
 Mill Supt: C E Bloom  
 Asst Mill Supt: Lee Magnuson  
 Mill Foreman: Richard Steinberg  
 Assayer: Peter Mack

#### GOLD COIN MINE

Star Rt 2, Sand Point  
 Mgr: J Deconner  
**MINE**, Bonner Co, Ag, Pb, Zn  
 Idaho

#### GOLDEN AGE MNG CO

Salt Lake City, Utah

**GOLDEN AGE MINE**, Boise Co.,  
Au, Ag, Pb

**GOLDEN RULE MINE**  
McCall  
Oper: George Wiastrom  
MINE, Burdett-Marshall Lake  
dist, Idaho Co., Au, Ag

**GOLDSTONE MNG CO**  
311 Securities Bldg,  
Boise, Wash  
Pres & Gen Mgr: B W Porter  
VP: Lynn Gunning  
Sec: Emil Mottman  
Gen Supt: Walter E Deighton  
Genl: Arthur Lakes  
Purch Agt: F L Mills  
GOLDSTONE MINE, Salmon, 21 mi  
SE of Salmon, undergr, Au, Cu,  
Pb  
Mine Supt: Walter Deighton  
Mine Foreman: Leonard Warrick  
Mine Engr: Arthur Lakes  
Under devel  
150-TON FLOT MILL

**GRANADA LEAD MINES INC**  
Box 157, Wallace  
Pres: E G Gooding  
VP: R L Rowdy  
Met: Phil Conley  
GRANADA MINE, 3 1/2 mi E of  
Wallace, Pb, Ag, Zn  
Under devel  
FLOT MILL  
Assayer: Peter Mack  
Idle

**GRAND VIEW MINE**  
Box K-85, Salmon  
MINE, 11 mi S of Salmon,  
undergr, Au, Ag, Cu  
Under devel

**GRIMES CR DREDGING CO**  
Boise  
MONAZITE PLACERS, Boise Co.,  
Au, Ag

**HAILEY TRUST CO**  
Hailey  
MINE, on Camp Cr, U<sub>2</sub>O<sub>3</sub>  
Under devel

**HANNEY MNG CO**  
Mackay  
HANNEY MINE, Custer Co, W<sub>2</sub>O<sub>3</sub>  
HANBY COPPER & GOLD  
MINES  
Box 185, Wallace  
Pres: Gus Belashy  
VP: Osborne Belashy  
Gen Mgr & Purch Agt: Sam  
Belashy  
Sec: Bill Bradenbury  
HANBY MINE, 3 mi SE of Adair,  
undergr, Cu, Au, Ag, Bi  
Under devel

**HARRY ANN MINE**  
Mackay  
Oper: Francis Fere  
MINE, Alder Cr dist, Custer Co,  
Ag, Pb, Zn  
Idle

**HAYDEN HILL CONS  
MNG CO**  
612 Chronicle Bldg  
Spokane, Wash  
Pres: W T Anderson  
VP: J B Phillips  
Sec: C C Anderson  
Gen Mgr: R R Weideman  
PURIM GROUP, Silver Bell,  
Coeur d'Alene  
(Leased to Silver Dollar Mng)

**HEATH, TED D**  
Box 117, Fairfield  
BORN SILVER GP, Little Smoky  
dist, Camas Co, Au, Ag, Pb, Zn  
Under devel  
RUBBY GP & BEITY, Soldier  
dist, Camas Co, Ag, Au  
Under devel  
MOUNTAIN VIEW GP, Skiatlaton  
Cr dist, Elmore Co, Au, Ag  
Under devel

**HECLA MNG CO**  
Box 185, Wallace  
Pres: L J Randall  
VP: J L McCarthy  
VP & Genl: R E Bradenbury  
Gen Mgr: R W Neyman  
Sec: John E Bradenbury  
Purch Agt: R O Hall  
HECLA MINE, Burbo, Pb, Zn  
Idle

**100-TON FLOT MILL**, Gen  
Mill Supt: Norman Fisher  
Assayer: J M Simpson

**HEINE MINES, INC**  
Meridian, Boise, Bellevue  
Owner: A L Heine, Boise  
BELLEVUE GOLD GALENE,  
Bellevue, Au, Ag, Cu, Pb,  
Zn, Mn, V  
14-TON BEAM SMELTER  
Under devel

**HERMADA MNG CO**  
Twin Springs  
Pres: Ernest Oberbiller  
Mgr: Gilbert Pearson  
VP: Jess Hawley, Jr  
Sec-Treas: Carol Oberbiller  
HERMADA MINE, 30 mi W of  
Atlanta, surface  
TALACHE CUSTOM FLOT MILL,  
Atlanta  
Idle

**HIGHLAND-SURPRISE  
CONSOL MNG CO**  
Cyde-Taylor Bldg, Wallace  
Pres: Frank J Luedhe  
VP: Henry C Smith  
Sec-Treas: W A Callaway  
Gen Supt: Thor Klobunichy  
HIGHLAND-SURPRISE MINE,  
Kellogg, 15 mi SW of Kellogg,  
undergr, Zn, Pb, Ag  
Prod: 50 tons  
Mine Foreman: Allan W Darrett  
300-TON FLOT MILL  
Mill Supt: Robert A Rice

**HILLTOP MINE**  
122 S 1st St, Pocatello  
Mgr: Joe Hamilton  
MINE, Lemhi Co, Au, Ag, Pb, Cu

**HINES, MARVIN**  
Sagle  
BROWN BEAR MINE, Prod  
d'Oreille dist, Bonner Co, Ag

**HOPE SILVER LEAD  
MNG, INC**  
Box 182, Clark Fork  
Pres: Glenn C Lee  
VP: Ed Groening  
Sec-Treas: L P Larson  
HOPE MINE, Undergr, Pb, Ag, Zn  
Foreman: E T Shields  
Engr: Harold Shields  
150-TON FLOT MILL

**HORN SILVER MNG & MLO  
CO**  
Box 1010, Wallace  
Prod: W H Hanson  
Sec: S F Hatfield  
MINES, 5 mi S of Wallace, Ag, Pb,  
Cu  
Idle

**BULL LEASE**  
Box 709, Wallace  
Mgr: H J Hull  
Purch Agt: August Voltolini  
CEM MINE, Gen Undergr, Zn, Pb,  
Ag  
Mine Supt: Harry Voltolini  
Prod: 75 tons  
100-TON FLOT MILL  
Mill Supt: Fausto Voltolini

**HUMPS OF GOLD MINE**  
Wallace  
Owners: Leo Earhart & Richard  
May  
MINES, 15 mi E of Orogrande  
undergr, Au  
Idle

**HYPOTHEK MNG & MLO CO**  
310 Bank St, Wallace  
VP: Sig Thorlenson  
Sec & Gen Mgr: Ray N Kingsbury  
OLD HYPOTHEK & KING OF HINE  
CREEK MINES, Kingston, Au, Ag,  
Pb  
Under devel

**IDAH0 BERYLLIUM & MICA  
CORP**  
Box 170, Darry  
Pres: Leo J Mason  
VP: Glen L Evans  
Sec: John A Carver, Jr  
Gen Mgr: Arley Hamer  
MUSCOVITE MINE, Avon dist, 10  
mi N of Darry, undergr & surface,  
mica, beryl  
Mine Engr: Albert E Smith, Jr

**IDAH0-CANADIAN  
DREDGING COMPANY**  
Box 1127, Boise  
Pres & Gen Mgr: H B Murphy  
VP & Supt: Miles M Young  
Sec-Treas: George E Murphy  
Gen Supt: Willard J Bennett  
MINE, Box 87, Cascade, 75 mi  
N of Boise, placer, bucket-line  
dredge, monazite, ilmenite,  
garnet & zircon  
Prod: 50 tons concentrate

**IDAH0-CONTINENTAL MINE**  
Bonners Ferry  
MINE, Port Hill dist, Boundary  
Co, Ag, Cu, Pb, Zn

**IDAH0 CUSTER MINES, INC**  
Box 489, Wallace  
Pres: Elmer Swanson  
VP: O O Miller  
Sec: H F Magnuson  
IDAH0 CUSTER MINE, 18 mi  
S of Clayton, Pb  
200-TON MILL

**IDAH0 GARNET ABRASIVE  
CO**  
Farnwood  
Owner & Oper: Lowell Thompson  
Asst Mgr: Everett Thompson  
Sec: Marshal Tripp  
EMERALD CR DIGGINGS, 8 mi  
S of Farnwood, placer, garnet  
Prod: 8,000 tons per yr  
100-TON JIG & CRUSHING PL,  
Emerald Cr

**IDAH0 GOLDFIELDS, INC**  
W 1114 Indiana, Spokane IT, Wash  
Pres & Gen Mgr: L A Thompson  
VP: W M Fredericks  
Sec-Treas: James Mine  
DONAHOE LEASE, "Fourth of  
July" Canyon, undergr, Pb, Ag  
Under devel

**IDAH0 LAKEVIEW MINES CO**  
502 Columbia Bldg, Spokane, Wash  
Pres & Gen Mgr: J L Drumbheller  
VP: Martin Woldson  
Sec-Treas: L R Gordon  
Gen Supt: Earl A McDaniel  
IDAH0 LAKEVIEW MINE, Lakeview  
undergr, Ag, Pb, Zn, Au  
Under devel  
KEEP COOL MINE, Lakeview  
Undergr, Pb, Ag, Zn Au, Cu  
Idle  
75-TON FLOT MILL

**IDAH0 MINING COMPANY**  
Box 293, Kellogg  
Pres: C Aubrey Grieson  
VP: L E Reeson  
Sec & Gen Mgr: Bruce E Allgaler  
Gen Supt: Otto E Haaland  
WASHINGTON-IDAH0 MINE, west  
fork, Moon Creek, 6 mi NE of  
Kellogg, undergr, Pb, Zn, Ag, Cu  
Mine Supt: Otto E Haaland  
Idle

**IDAH0-WARREN DREDGE CO**  
Centerville  
Pres & Gen Mgr: A F Baumhoff  
Sec-Treas: G T Eymann  
ELK CITY & YANKEE PORK  
MINES  
4,000-yd bucket dredge, Au  
Dredgemaster: J R Johnson

**IDAMONT LEAD-ZINC  
MINES CO**  
S 2323 Lincoln St, Spokane, Wash  
Pres: R H Russell  
VP: B A Smith  
Sec: W B Russell  
IDAMONT MINE, Loomis, undergr,  
surface & placer  
Under devel

**INDEPENDENCE & EMPIRE  
MINES**  
Boise  
Owner: Oscar Pearson  
MINES, Bear Creek & Feather-  
ville dists, Elmore Co, Au, Ag  
Idle

**INSPIRATION LEAD CO**  
W 988 Sprague Ave, Spokane 4,  
Wash  
Pres: E H Carlson  
VP: C C Anderson  
Sec-Treas & Gen Mgr: V T  
Anderson  
Purch Agt & Asst Gen Mgr:  
R R Weideman  
INSPIRATION LEAD MINE, 304 S St,  
Wallace, undergr

Gen Supt: R R Weideman  
Cool: W H Simons  
Mine Supt: Horace Smith  
Under devel  
(See Utah)

**INTERMOUNTAIN MNG CO**  
Wallace  
PORTABLE HMS MILL  
Cap: 500 tons

**IONE MNG CO**  
Wallace  
IONE MINE, Boise Co, Ag, Pb

**IRON MT MNG CO, INC**  
Box 523, Weiser  
Pres & Gen Mgr: Frank Norrman  
Sec: Claudia J Merritt  
MORTIMER GROUP, 30 mi N of  
Weiser, undergr, Pb, Ag, Cu,  
Zn, Au  
Idle

**J S PLACER**  
Garden Valley  
Operator: George Zett  
MINE, Grimes Pass dist, Boise Co,  
Au, Ag  
Idle

**JOHNSON MINING COMPANY**  
1230 N 11th St, Boise  
Owner: a C Johnson  
MIDDLEMAN CLAIMS, Pearl, 25  
mi N of Boise, undergr, Au, Ag,  
Pb, Zn  
Mine Supt: Jack Taylor  
Under devel  
20-TON FLOT MILL  
Mill Supt: Mr Ubank  
Idle

**JORDON PLACERS, INC**  
Boise  
WHARTON PLACER, Boise  
Basin dist, Boise Co, Au, Ag

**K & D MNG CO**  
McCall  
RUBY MEADOWS MINE, Warren  
dist, Idaho Co, Au, Ag, garnet  
KING OF PINE CR MNG  
CO  
612 Chronicle Bldg, Spokane,  
Wash  
Pres & Gen Mgr: C C Anderson  
VP: E H Carlson  
Sec: L Howe  
MINE, Wallace  
Idle

**KLESATTEL MINE**  
Elk City

**KUBESCH, JAMES E**  
Sweet Home, Oregon  
FREE GOLD, DUTCH MILL  
MINES, Pierce dist, Clear-  
water Co, Au, Ag

**KWAJALEIN MINE**  
Challis  
Operator: L V Carothers  
MINE, Yankee Fork dist,  
Custer Co  
Idle

**LAKEVIEW LEASE**  
647 Peyton Bldg, Spokane, Wash  
Owner: R B Austin  
WEBER MINE, 21 mi E of Athol,  
surface, Ag, Au  
Prod: 8,000 tons per year  
Mine Foreman: Otto Meyer

**LARSON, R W**  
South Fork Lodge, Golden  
SOUTH FORK MINE, 11 mi E of  
Golden, undergr, Au, Ag  
Idle

**LATEST OUT MINE**  
Oper: Harry Stout, Gilmore  
MINE, Texas dist, Lemhi Co, Ag,  
Cu, Pb  
Idle

**LAWRENCE COWS MINING CO**  
Clark Fork  
Pres: C J White  
Sec: C J White, Jr  
LAWRENCE GROUP, Clark Fork,  
Pb, Ag, Sb  
50-TON CONC  
Under devel

**LEAD BLOSSOM MNG &  
MILLING COMPANY**  
423 High St, Wallace  
Pres: Jerry Gruber

VP: Margaret Denny  
LEAD BLOSSOM MINE, Wardner,  
undergr, Ag, Pb  
Idle

LEADVILLE MINE  
Leads  
Oper: Hayco, Hayco & Zook  
MINE, Junction dist, Lemhi Co,  
Ag, Pb  
Idle

LEONARD BROTHERS  
Silver City via Murphy  
Gen Mgr: P L Leonard  
FAUPER GROUP, 3 mi SE of  
Silver City, undergr, Au, Ag, Cu  
2-TON GRAY-AMAL MILL  
Idle

LEONARD, MRS R H  
Silver City via Murphy  
DAVIDSON GROUP, 3 mi E of  
Silver City, undergr, Au, Ag  
Idle  
EMPIRE GROUP, 2 1/2 mi E of  
Silver City, undergr, Au, Ag  
Idle

LEONE MARIE MINE  
Ore  
Operators: Gambling & Skinner  
MINE, Bear Lake dist, Bear  
Lake Co, Ag, Pb  
Idle

LEWIS-CLARK URANIUM CO  
Box 177, Kamiah  
Pres & Gen Mgr: James Danielson  
VP & Asst Gen Mgr: O R  
Schuchert  
Sec-Treas: R L Ambary  
LEWIS-CLARK NO 1-A, Dig  
Mallard Cr  
EXPLORE U<sub>3</sub>O<sub>8</sub>

LIVINGSTON MINES, INC  
3210 W 74th St, Seattle, Wash  
Pres: Harry C Patrie  
Gen Mgr: Henry Mears  
LIVINGSTON MINE, Bayhorse  
dist, 16 mi S of Clayton, Pb  
Under-devel  
200-TON MILL

LOOKOUT MT MNG &  
MLG CO  
Box 838, Kellogg  
Pres: Wendell R Brainard  
VP: Harry G Alway  
Sec-Treas: P J Holte

LUCKY CUSTER MNG CORP  
Boise  
GENERAL CUSTER MINE, Custer  
Co, Au, Ag

LUCKY FRIDAY SILVER-  
LEAD MINES CO  
Box 1131, Wallace  
Pres & Gen Mgr: John Seballe  
VP: Chas E Hanning  
Sec: W J Enacio  
LUCKY FRIDAY MINE, Mullan,  
Hunter dist, Pb, Ag, Au, Cu, Zn  
Prod: 100 tons  
Mine Supt: David Elder

LUCKY SIX MINING CO  
Julietta  
Pres: Donald Cantrill  
Sec-Treas: John Longteig  
Gen Supt: Alec McIntosh  
Ch Engr: Harold Freeman  
455 MINE, Clarkie, 2 mi SW of  
Clarkie, undergr & placer, Ti,  
Fe, Au  
Under devel  
-1 MINE, Southwick, 6 mi E of  
Southwick, undergr & placer, Ti,  
Fe, Au

MACKAY EXPLOR CO  
4212 Franklin Rd, Boise  
Pres & Gen Mgr: W P Barton  
VP: D E Bell  
Sec: M S Burton  
EMPIRE MINE, 3 mi W of  
Mackay, Cu, Au, Ag, WO<sub>3</sub>  
Under devel

MASCOT MINES, INC  
Box 889, Kellogg  
Pres: Robert E Brown  
VP & Purch Agt: Dunham Bell  
Sec-Treas: Claude E Nugent  
LITTLE PITTSBURG MINE, Pine  
Cr, Kellogg, undergr, Zn, Pb, Ag  
Mine Supt: Inar Norgaard  
Mine Engr: Claude E Nugent  
Under devel  
150-TON FLOT MILL  
Idle  
(See Color)

#### MAYFLOWER GOLD MINES, INC

Placerville  
Pres & Gen Mgr: J B Eldridge  
VP: H H Eberle  
Sec: G R Eldridge  
MINE, 3 mi NW of Placerville,  
undergr & placer, Au, Ag,  
monazite, rare earths

MCGREGOR MINING CO  
Box 43, Cataldo  
Pres: M C Jacobson  
Sec: Mrs Grace Jacobson  
MCGREGOR, PACIFIC MINES,  
Cataldo Gulch, Au, Ag, Cu,  
Pb, Fe

McRAE TUNGSTEN CORP  
Subsidiary  
Pres: R J McRae  
VP: Hubert Martin  
Gen Supt: Harry M Sargent  
SNOWBIRD & RED BLUFF MINES,  
Subsidiary, 10 mi W of Big Creek,  
Valley Co, undergr, Hueschelite,  
Schreibite  
Prod: 35 tons  
Mine Supt: James Colford  
Under devel  
36-TON FLOT-GRAY MILL Dig Cr

METALINE & PINE CREEK  
CONSOL MNG CO  
Scott Bldg, Wallace  
Pres: Stanley Easton  
VP: J B Haffner  
Sec: L J Randall  
Asst Sec: H F Magnuson

METALLICS UNLIMITED  
Box O, East Ely, Nev  
VALLEY VIEW MINE, Star Rd,  
Dubois, 35 mi NW of Mudlake,  
undergr, Cu  
Under devel

THE MINE'S, INC  
521 N 8, Boise  
Pres & Gen Mgr: Ramon S Carlton  
Sec: H V Packer  
Geol: Robert Charbonneau  
B&W #1-2, RITAMAE #1-2, 3 mi W  
of Bellevue, undergr, Pb, Ag, Zn,  
Au  
Under devel

MINERAL RECOVERY &  
ENGINEERING CO  
Box 619, Osburn  
Proprietor: Paul H Floyd  
WO<sub>3</sub> UPGRADING PL (GRAY-FLOT),  
Burke Canyon near Gem  
Capacity: 20 units WO<sub>3</sub> daily

MONSANTO CHEM CO  
Monsanto  
Pl Mgr: J L Whiteside  
Asst Pl Mgr: J E Gurvin  
Prod Supt: W P Dunlap  
Main Supt: F P Hendrickson  
Pl Putch Supt: G F Dupin  
BALLARD MINE, 15 mi N of  
Monsanto, open pit,  
phosphate rock  
Mng Supt: R R Crouse  
Mng Engr: J A Reeves  
Prod: 3,000 tons  
1,500-TON ELEC FURNACE PL  
Furnace Supt: W W Wade  
Asst Furnace Supt: W N Bingham  
(See Mo. Tem)

MORMON CITY MINE  
Pearl  
Oper: O A Paul  
MINE, West View dist, Gem Co,  
Ag, Au, Cu, Pb, Zn

MOUNTAIN KING MINE  
Box 33, Halley  
Mng: Fred & Earl Shirts  
MINE, Seaford dist, Custer Co,  
Au, Ag, Cu, Pb, Zn

NABOB SILVER-LEAD CO  
Box 889, Kellogg  
Pres: H J Hall  
VP, Gen Mgr & Purch Agt:  
C C Dunkle  
Sec-Treas: June N Olson  
NABOB MINE, Pine Cr, undergr,  
Zn, Pb  
300-TON FLOT MILL  
Mill Supt: E M George  
Assay: C V Barto

NATIONAL MINES, INC  
Box 277, Melad  
Pres: W L Baker  
VP & Gen Mgr: C A Dye  
Sec: Rlyote G Clemens  
SENTINEL MINE, 20 mi NE of  
Nowa, Zn, Pb, Ag

#### NEW HILARITY MNG CO

Box 27, Spokane, Wash  
Pres: R W Neyman  
VP: W Brainard  
Sec-Treas: E K Barnes  
Asst Sec-Treas: E M Borjesson  
MINE, Box 9 J, Wallace  
Foreman: Eugene C Iverson  
Idle

NEW HOPE MINE  
Ketchum  
Oper: Eugene Moson  
MINE, Warm Spr dist, Blaine  
Co, Ag, Pb

NICHOLIA MINE  
Gilmore  
Owner & Oper: Joe Zook  
NICHOLIA MINE, Spring Mt dist,  
Lemhi Co, undergr, Ag, Pb  
Prod: 5-10 tons

NIXON, WM A ESTATE  
Rocky Bar  
Oper: Oscar Pearson  
EMPIRE GROUPS, Elmore Co

NORTH FORK MNG CO  
Box 449, Wallace  
Pres: L S Edwards  
VP: Vernon J Robinson  
Sec: Earl Chilcott  
MINE, 18 mi N of Wallace

PAYMASTER, INC  
611 Peyton Bldg, Spokane, Wash  
Pres: Frank N Marr  
Sec: C D Randall  
MINE, 21 mi SW of Arco, undergr  
Idle

PENMAN MINE CLAIMS  
c/o Ross R Brattain, 7800 SE  
22nd Way, Mercer Island, Wash  
CLAIMS, Orogrande, 4 mi SE of  
Orogrande on Dixie Road, undergr,  
As  
Idle

PHOENIX MINES  
Mackay  
Partners: Harvey Beverland, J L  
Austick  
MINES, Mackay, undergr, WO<sub>3</sub>  
Under devel

POLARIS MNG CO  
Box 320, Wallace  
Pres: L J Randall  
Sec: Eloy Enbom  
Gen Mgr: R W Neyman  
Treas: J R Matthews  
Geol: R E Sorenson  
Purch Agt: R G Hull  
SILVER SUMMIT MINE, 7 mi W  
of Wallace, undergr, Ag, Cu  
Mine Supt: George Grimsar  
Mine Foreman: A P MacDonald  
FLOT MILL  
Mill Supt: N J Sather  
Mill Foreman: J G Dalgleish  
(See American Silver Mng Co,  
Rainbow Mng & Mlg Co, Ltd,  
Silver Dollar Mng Co)

PREMIER STAR MNG CO  
Box 132, Osburn  
LUCRETIA CLAIMS, Hunter dist,  
Shoshone Co  
Idle

PROFILE TAMARACK MINES  
c/o E F Slovap, 309 SW 4th Ave,  
Portland, Ore  
Pres: C E Thompson  
VP & Gen Supt: H T Shetela  
Sec: E F Slovap  
CENTRAL GALENA GROUP, Yellow  
Pine, 70 mi NE of Cascade, undergr,  
Ag, Pb, Zn, Au, Cu  
Idle

PUMICE, INC  
Box 317, Idaho Falls  
Pres & Gen Mgr: R L Milner  
VP: R Neal McDonald  
Elec Engr: CHW E Emerick  
Sec: Robert E Lee  
Geol: V E Camorini  
MINES, 7 mi E of Idaho Falls,  
surface, pumice  
Prod: 250 tons  
Mine Supt: H A Harmon  
1,200-TON CRUSH-SCREEN PL,  
Ammen, 5 mi E of Idaho Falls

QUIGLEY MNG SYNDICATE  
1129 10th Ave N, Seattle 2, Wash  
Pres: W J Logan  
Geol: James H McDonald  
QUIGLEY MINE, Halley, 6 1/2 mi

E of Halley, undergr, Pb, Ag, Zn  
Under devel

#### RAINBOW MNG & MLG CO, LTD

Box 889, Wallace  
Pres: H C Mowrey  
Sec-Treas: W A Callaway  
RAINBOW #1 GROUP, Evolution  
dist, Cu, Ag, Pb, Zn  
Under devel by Polaris Mng Co

RAMSHORN MINES CO  
333 Felt Bldg, Salt Lake City,  
Utah  
Pres: W W Murray  
Sec: Leo Eager  
RAMSHORN & BEARDSLEY MINE,  
Bayhorse, 70 mi NW of Mackay,  
Ag, Pb, Cu  
(Leased to Bayhorse Mines, Inc)  
Idle

RARE METAL MINES, INC  
E 601 Crown Ave, Spokane, Wash  
Pres: Arthur J Hooper  
MINE, Donner Co, Au, Ag

RED BIRD MINE  
Clayton  
Partners: Buchman, Breckon &  
Hurdie  
Gen Mgr: J A Morden  
MINE, 8 mi NW of Clayton,  
undergr, Pb, Ag  
Prod: 300-400 tons per month

RED LEAF GP  
Halley  
Oper: E W Sowers, Stanley  
Johnson  
MINE, Mineral Hill & Cameo  
Dist, Blain Co, Ag, Pb

RELYEA, GEORGE A  
Pierce  
RED CLOUD MINES 1-10, 9 mi  
E of Pierce on Oroline Cr,  
undergr, Au, Ag  
Mine Supt: George A Relyea  
Mine Foreman: John Passer  
Under devel  
(See Mont)

RICHARDSON PLACERS  
Box 756, Salmon  
Agt: Mrs J R Shoup  
Mgr: O E Shoup  
PLACERS, 22 mi W of Salmon,  
Au, Ag

ROCK, TOM  
Silver City  
MINE, undergr, Au, Ag  
Under devel

RUDOLPH & HAYES  
Goulden  
BOB MINE, 10 mi dist, Idaho Co,  
Au, Ag

SALMON RIVER SCHEELITE  
CORP  
Salmon, Clayton  
Pres & Purch Agt: Robert Harris  
VP: Clinton A Gundersen  
Sec-Treas: James E Chittie  
SALMON RIVER MINE, Salmon,  
undergr, surface, WO<sub>3</sub>  
Gen Mgr & Mine Supt: James Clutts  
Asst Gen Mgr & Asst Mine Supt:  
Clinton A Gundersen  
Prod: 30 tons

#### SAN FRANCISCO CHEMICAL CO

Montpelier  
Pres & Gen Mgr: D L King  
VP: W Jerome Taylor  
Sec & Purch Agt: Rex L Jones  
WATERLOO MINE, E of Montpelier,  
surface, phosphate rock  
Supt: Chas C Stephens  
(See Utah, Wyo)

SCHMITTROTH, WALTER &  
ETBERTON, J  
Battlesville

BIG IT MINE, Shoshone Co, WO<sub>3</sub>

SCHULTZ, HARRY A  
Idaho City Stage, Boise  
RAINBOW GROUP PLACER, Au  
Pres & Gen Mgr: Carter Wood  
VP & Asst Gen Mgr: L A Darland  
Sec-Treas: Curtis T Vandy  
ARKANSAS LEASE, Copurno, Co,  
Ag, Au, WO<sub>3</sub>  
Under devel



**SHAMROCK #1 MINE**

Golden  
 Gen: W W White  
 MINE, 10 mi dist, Moho Co

**SIDNEY MINING CO**

100 Sidney Bldg, Kellogg  
 Pres: M C Brown  
 Sec-Treas: F E Marler, Jr  
 Gen Supt: C A McKinley  
 MINE Engr: Zane Smith  
 Purch Agt: L G Phipps  
**SMOKEY MINE**, 15 mi S of Kellogg,  
 undergr, Zn, Ag, Pb  
 Prod: 200 tons  
**300-TON FLOT MILL**, Pine Cr  
 dist  
 Supt: C A McKinley

**SIGNAL MINING CO**

400 Main St, Kellogg  
 Pres: W G Almy  
 VP: John D Penney  
 Sec: Wendell R Reinhard  
 Gen Supt: Eugene C Iverson  
**HELIUM GROUP**, 7 mi W of  
 Kellogg, undergr, Zn, Pb, Ag  
 Mine Supt: Eugene C Iverson  
 Under devel

**SILVER BANNER MNG CO**

Tabor Bldg, Wallace  
 Pres: D W Stewart  
 VP & Gen Mgr: S K Garrett  
 Sec: H J Hull  
**SILVER BANNER MINE**, 6 mi E  
 of Wallace  
 Idle

**SILVER BUCKLE MNG CO**

Box 1055, Wallace  
 Pres: Dr F E Scott  
 VP & Purch Agt: Clark L Wilson  
 Sec: Alden Hull  
 Treas: Jack D Gay  
**SILVER BUCKLE & VINDICATOR  
 MINES**, Wallace & Mullan, Pb, Ag  
 Gen Mgr & Geol: Clark L Wilson  
 Gen Supt: Gale Hansen  
 Under devel

**SILVER DOLLAR MNG CO**

809 W Sprague Ave, P O Box 122,  
 Spokane 10, Wash  
 Pres: Elmer E Johnston  
 VP: R B Graham  
 Sec: L F Connolly  
 Treas: W T Anderson  
 Purch Agt: R J Carlson  
**SILVER DOLLAR MINE**, Osburn,  
 Pb, Ag  
 Geol: F E O'Connor  
 (Mine jointly owned with Polaris Mng  
 Co)

**SILVER STAR MINES**

310 Bank St, Wallace  
 Pres: M D Anderson  
 Sec: V C Kingsbury  
**SILVER STAR MINE**  
 Idle  
 (See Utah)

**SILVER STAR-QUEENS  
 MINES, INC**

Box 135, Halley  
 Pres & Gen Mgr: N T Davis  
 VP: M E Krouger  
 Sec-Treas: C C Lothe  
**OLD MINNE MOORE & QUEEN  
 OF THE HILLS MINES**, 1 1/4 mi  
 W of Bellevue, undergr, Pb, Ag, Zn  
 Gen Supt: Roy T Pitt  
 Under devel

**SILVER STILL MNG CO**

Boise  
 Pres: Lee Thomson  
 VP: Kenneth Stock  
 Sec: E W Bauer  
**SILVER STILL MINE**, Mineral,  
 20 mi N of Weiser, Id, Cu, Pb,  
 Zn  
 Idle

**SILVER SYNDICATE, INC**

Box 1070, Wallace  
 Pres & Gen Mgr: W M Yonson  
 VP: Ray Morrison  
 Sec-Treas: A H Featherstone  
**SILVER SYNDICATE MINE**, 10 mi  
 from Wallace, undergr, Au, Cu,  
 Pb, Zn, Ag  
 Operated by Sunshine Mng Co

**SIMMONS, D W**

300 Oak St, Boise  
**QUEEN MINE**, 7 mi W of Atlanta,  
 placer, Au

**J R SIMPLOT CO**

Continental Bank Bldg, Boise

**Pres: J R Simplot**

VP: W Grant Kilbourne  
 Treas: John M Dahl  
 Sec & Atty: Lloyd E Haight  
 Mgr of Mines: George A McHugh  
 Staff Engr: O E Pothier  
 Supt Geol: S A Robinson  
 Mng Engr: Don Ferguson  
 Explor Mgr: Phosphate Div: C W  
 Sweetwood  
**FERTILIZER DIV**, Box 912, Pocatello  
 VP & Gen Mgr: W Grant Kilbourne  
 Purch Agt: Austin Richins  
**QAY MINE**, near Port Hall, surface,  
 phosphate

Mine Mgr: John Kobe

Mine Supt: Ray Bowden

Mine Engr: Maurice V Hansen

Prod: 0,000 tons

**FERTILIZER PLANT**, Pocatello

Pl Engr: R L Long

Chem Engr: Oscar C Finkelsburg

Auditor: William Hahn

**FLOORS PAR DIV**, Challis

Mgr: Keith Madill

(See Simplot in Colo; also Warren  
 Dredging Corp in Idaho)

**SMOTHERS, A P**

Simplot  
**ELKHORN BAR PLACER**, 50 mi W  
 of Shoup, dragline placer, Au, rare  
 earths  
 Idle  
**BROKEN HALTER MINE**, 50 mi W  
 of Shoup, undergr & surface, Cu, Pb,  
 Under devel

**SNOOSE MINING CO**

Box 67, Halley  
 Pres: W F Smith  
 VP: Mrs A M Jensen  
 Sec-Treas: R S Bacon  
**SNOOSE MINE**, 2 1/2 mi SE of  
 Halley, undergr, Zn, Pb, Ag  
 Idle

**SOUTH BUTTE MINE**

Mackay  
 Ope: Edward Herringer  
**MINE**, Bayhorse dist, Custer Co,  
 Ag, Cu, Pb, Zn  
 Idle

**SOUTH MOUNTAIN MNG CO**

Jordan Valley, Oregon  
**GOLCONDA MINE**, 5 mi Mng dist,  
 Owyhee Co, Ag, Pb, Zn

**SPOKANE-IDAHO MNG CO**

511 Payton Bldg, Spokane 1, Wash  
 Pres: Frank H Harr  
 Sec: C D Randall  
 Treas: Charles E Marr, Jr  
**CONSTITUTION MINE**, Box 930,  
 Kellogg, 8 1/2 mi SE of Pine-  
 hurst, undergr, Zn, Pb  
 Gen Mgr: Omi Herlin  
 Prod: 100 tons  
**180-TON FLOT MILL**  
**DOUGLAS MINE** (See Douglas Mng  
 Co)

**SQUAW PEAK MINE**

McCall  
 Partners: F B Frazer, L L Frazer,  
 R J Frazer & A H Roger  
**MINE**, 23 mi N of McCall, undergr  
 & surface, Au, Pb, Zn, Ag, Cu,  
 WO<sub>3</sub>, UO<sub>2</sub>  
 Supt & Mgr: G W Frazer, Weiser  
 Under devel

**SUCCESS MINING CO**

Wallace  
 Pres: Henry L Day  
**SUCCESS MINE**, Wallace, Zn, Pb,  
 Ag, Sn  
 Idle

**SULLIVAN MNG CO**

Box 320, Wallace  
 Pres: L J Randall  
 VP: J D Bradley  
 Sec: I A Robinson  
 Treas: J R Matthews  
 Asst Sec & Asst Treas: W C Beamer  
**STAR MINE**, Burbo, undergr, Zn,  
 Pb, Ag  
 Gen Mgr: R W Hayman  
 Chief Geol: H E Doremus  
 Mech Engr: W H Love  
 Elec Engr: N Hubka  
 Purch Agt: R G Hull  
 Mine Supt: Lee Mosserly  
**FLOT MILL**, Burbo  
 Mill Supt: W J Sather  
 Mill Foreman: S Miller  
 Assay: T Byrd  
**BLACK-INK SMELTER**, Silver King  
 Mgr: W G Woolf  
 Supt: A Y Bedmore  
 Coast & Main Supt: E W Wainman  
 Purch Agt: K Killman

**SUN VALLEY LEAD-SILVER  
 MINES, INC**

Box 57, Ketchum  
 Pres & Gen Mgr: R L Roundy  
 VP: L O Lindberg  
 Sec & Purch Agt: J R Thornton  
**BLUE KITTEN MINE**, 8 mi W of  
 Ketchum, undergr, Pb, Ag, Zn, Au  
 Prod: 20 tons  
 Mine Foreman: F W Lease  
 Mine Engr: C C Livingston  
 Under devel  
**75-TON FLOT MILL**, 6 mi W of  
 Ketchum  
 Mill Foreman: George W Stokas  
 Idle

**SUN VALLEY MNG CORP**

138 S Locust St, Jerome  
 Gen Mgr & VP: John Owen  
 Gen Supt: E A Yaden  
 Geol: Joe Shipman  
 Met: Mark G Smerchanski  
 Sec-Treas: Louise M Lindsay  
**MINE**, Halley, Ag, Au, Zn, Pb  
 undergr  
 Mine Supt: Emmett Yaden  
 Mine Engr: Mark G Smerchanski  
**100-TON MILL**

**SUNSET LEASE**

Day Bldg, Wallace  
 Gen Supt: R Farina  
**SUNSET MINE**, 10 mi N of Wallace,  
 undergr, Zn, Pb

**SUNSET MINES, INC**

Box 889, Kellogg  
 Pres: O Bardahl  
 VP: David Harvey  
 Gen Mgr: R E Lomas  
 Sec-Treas: C B Merritt  
**LIBERAL KING MINE**, 11 mi W  
 of Kellogg, undergr, Zn, Pb, Ag,  
 Au  
 Prod: 60 tons  
 Mine Foreman: Paul Crawford  
**125-TON FLOT MILL**  
 Mill Supt: Franklin Sharp

**SUNSHINE CONS, INC**

102 Sidney Bldg, Kellogg  
 Pres: W M Yonson  
 VP: W T Simons  
 Sec: F E Marler, Jr  
 Gen Mgr: N M Smith  
**SUNSHINE CONS MINE**, 6 mi E  
 of Kellogg, undergr, Ag  
 Under devel by Sunshine Mng Co

**SUNSHINE MNG CO**

Box 1312, Yakima, Wash  
 Pres: R M Hardy  
 VP: R D Leisk  
 Sec: C M Hull  
 Treas: Frank M Hardy  
**SUNSHINE MINE**, Box 1080, Kellogg,  
 undergr, Ag, Pb, Sn, Cu  
 Gen Mgr: Ross D Leisk  
 Asst Gen Mgr: Robert M Hardy, Jr  
 Gen Supt: John Edgar  
 Geol: James D Collins  
 Purch Agt: N J Osborne  
 Mine Foreman: Charles Angle  
 Mine Engr: James Durham  
 Prod: 800 tons  
**1,000-TON FLOT MILL**  
 Mill Supt: Wayne D Gould  
 Asst Mill Supt: Paul Floyd  
 Mill Foreman: Lyle Cornell  
 Assay: M F Scott  
**SILVER SYNDICATE MINE**  
 (See Silver Syn Mng Co)  
**SUNSHINE CON MINE**  
 (See Sunshine Cons)

**SUNSHINE PLACER**

c/o Super Grocery, Lawiston  
 Mgr: C R Williams  
**PLACER**, Idaho Co  
 Idle

**TALACHE MINES, INC**

1111 Grove St (P O Box 1048)  
 Boise  
 Pres: A H Burroughs, Jr  
 VP: B K Burroughs  
 Sec: E Bucking  
**BOISE-HOCHSTER & MONARCH  
 MINES**, Atlanta, undergr, Au, Ag  
 Gen Mgr: A H Burroughs, Jr  
 Gen Supt: Robert A Lohrop  
 Mine Foreman: D C Yonson  
**500-TON FLOT MILL**

**TAYLOR, RALPH M**

Arns  
**COPPER MTH MINE**, Butte Co, Cu

**TEMPLE MOUNTAIN  
 URANIUM CO**

20 Exchange Pl, Rm 23, Salt  
 Lake City, Utah

**Pres: Herman Heinicke**

VP: George Heinicke  
 Sec: Augustus Reeves  
**CHALLIS VIEW MINE**, Challis, Pb,  
 Ag  
 Gen Mgr: Herman Heinicke  
 Asst Gen Mgr: George Heinicke  
 Geol: B E Grant  
 Under devel  
 (See Utah)

**THORNTON MINING CO**

Garden Valley  
 Pres: Charles Thornton  
**COLUMBITE MINE**, 16 mi E of  
 Garden Valley, surface, columbite,  
 mica, sunnyskite, monazite  
 Prod: 50 tons  
**50-TON GRAY MILL**  
 Idle

**TREASUREMENT MNG CO**

1129 10th Ave N, Seattle, Wash  
 Pres & Gen Mgr: W J Logus  
 Sec: M A Logus  
 Geol: James M McDonald  
**QUICKLEY MINE**, 6 1/2 mi E of  
 Halley, undergr, Pb, Ag  
 Mine Supt: Al Linderman  
 Under devel

**TRIUMPH MINING CO**

Triumph  
 Pres: J W Sweet  
 VP: E H Snyder  
 Sec: John W Hamilton  
 Gen Mgr: L M Robinson  
 Elec Engr: Don Downard  
 Geol: J M Barrett  
 Purch Agt: Herbert Shear  
**TRIUMPH MINE**, Triumph,  
 undergr, Pb, Ag, Zn  
 Prod: 300 tons  
 Mine Supt: C C Livingston  
**300-TON FLOT MILL**  
 Mill Supt: M A Jorgensen  
 Asst Mill Supt: Marvin Seldin  
 Assayer: A L Hall

**TRUE FISSURE MNG CO**

Osburn  
 Own: Guido Bardall  
 Prospecting

**TURTLE MINE**

Challis  
 Owners: Leo D Irie & Elroy N  
 Kinsham  
**MINE**, Mackay, 1 mi from  
 Bayhorse, undergr, Ag, Pb, Cu  
 Under devel

**TWIN RIVERS, INC**

Riggins  
**GOLDEN RULE MINE**, Idaho Co,  
 Au, Ag

**TYEE MINING CO**

Spokane St Dock, Seattle, Wash  
**RIVER & SUNRISE MINES**,  
 Elk City, Au, Ag, dragline-dredge  
 Gen Mgr: C J Sebastian  
 Supt: S K Coates  
 Under devel

**UNITED MERCURY MINES CO**

Box 445, Boise  
 Pres: J J Overbiling  
**HERMES MINE**, Stibnite, undergr, Hg  
 Prod: 30 tons ore  
**TWO ROTARY FURNACES**  
 (150-ton capacity)

**URANIUM EXPLORATION  
 CORP OF IDAHO**

251 Main Ave E, Twin Falls  
 Pres: Bert A Sweet, Jr  
 VP: Bert Sweet, Jr  
 Sec-Treas: Leonard Maass

**URANIUM MINES, INC**

Box 469, Wallace  
 Pres: Robert E Brown  
 VP: O O Miller  
 Sec-Treas: W F Magnuson

**VINDICATOR SILVER-LEAD  
 MNG CO**

Wallace  
 Pres: W J Logus  
 VP: Mrs A M Logsdon  
 Sec-Treas: H F Magnuson  
**VINDICATOR MINE**, 3 mi E of  
 Mullan, undergr, Pb, Ag, Zn  
 Under devel

**WARREN DREDGING CORP  
 (J R SIMPLOT CO SUBS)**

Boise  
 Pres: J R Simplot  
 VP: L E Haight  
 Sec-Treas: John M Dahl  
 (See Simplot in Idaho; also Colo)



# WEST STAR MNG CO

1271 East, Coeur d'Alene  
Pres: H H Blasser  
VP: Chas U Burrell  
Sec: Julia M Hughes  
Treas: A Burrell  
WEST STAR MINE, Box 6, Gem  
undergr, Pb, Ag, Zn, Au  
Gen Mgr: A Markwell  
Under devel

# WESTERN CONS MINES, INC

Box 1499, Boise  
Pres & Gen Mgr: Gene Jack  
VP: John F Miller, E J Mulholland  
Sec: A C Wells  
Gen Supt: E Albrecht  
Geol: L N Rinchold  
Purch Agt: B Andrews  
OPHIR MINE, Rocky Bar, 66 mi  
N of Mountain Home, undergr,  
Au, Ag  
Mine Supt: V Macky  
Under devel  
50-TON FLOT MILL  
Mill Supt: Sidney Carr

# WHITE KNOB MNG CO

Newhouse Bldg, Salt Lake City,  
Utah  
Pres: O A Glaesser  
HOMESTAKE, COPPER QUEEN  
MINES, Alder Cr, Mackay, Pb,  
Zn, Ag

# WHITEDELPH MNG & DEVEL CO

Clarks Fork  
Pres & Gen Supt: Compton I  
White, Jr  
VP: W W von Cannon  
Sec & Gen Mgr: Compton I  
White, Sr  
WHITEDELPH MINE, 2 mi N of  
Clarks Fork, undergr, Ag, Pb, Zn  
Under devel  
50-TON FLOT MILL

# WILBERT MINING CO

326 Kearns Bldg, Salt Lake City,  
Utah  
Pres & Treas: R J Hogan  
VP: M F O'Reilly  
Sec: Claude Engberg  
DAISY BLACK GROUP, 35 mi E  
of House, undergr, Pb, Zn  
Idle  
TS-TON CONC  
Idle

# WILLIAMS, HARRY M

Box 781, Caldwell  
VALLEY VIEW MINE, Texas dist,  
Lemhi Co, Ag, Pb  
Idle

# WONDER LOBE CLAIMS, INC

Box 784, Salmon  
Pres & Gen Mgr: G Elmo Shoup  
VP: B M Shoup  
Sec: Fred H Snook  
Asst Gen Mgr: William R Shoup  
Gen Supt: William Monger  
WONDER LOBE-IDAHO PRIDE  
MINE, 31 mi E of Salmon on  
Highway 28, undergr, Cu, Ag, Au  
Idle

# WONDER MINING CO

Golden  
Gen Mgr: Ernest Butler  
WONDER MINE, 3 mi SE of  
Golden, undergr, Au  
15-TON GRAY MILL  
Idle

# ZANETTI BROS

Wallace  
BIG CHIEF, CERNUN &  
DEBLOCH TAILINGS, Evolution  
dist, Shoshone Co, Ag, Cu, Pb, Zn  
INTERSTATE-CALLAHAN MINE,  
Buxar dist, Shoshone Co, Ag, Pb,  
Zn

# ILLINOIS

# ALUMINUM CO OF AMER

Alcoa Bldg, Pittsburgh  
FAIRVIEW-BLUE DIGGINGS  
Rosiclare  
Gen Supt: W S Steele  
Geol: F E Williams  
Mech Eng: H E Elmer  
Met: W C Ray  
Purch Agt: G H Wolff  
MINE, undergr, Pb, Zn, CaF<sub>2</sub>

Mine Supt: P W Dorrance  
Mine Foreman: L Billington  
Mine Eng: S G Bousman  
Prod: 430 tons  
HMS FLOT MILL, at mine  
Mill Supt: W C Lay  
Asst Supt: L K Loyd  
(See Ore, Penn)

# AMERICAN COLLOID CO

Merchandise Mart Place,  
Chicago 54  
Pres & Gen Mgr: Paul Deenmer  
VP: W D Weaver  
Asst Sec: Jonathan Edmon  
Purch Agt: Roy H Harris  
(See Miss, S Dak, Wyo)

# AMERICAN SMELTING & REFINING CO

Federal  
FEDERAL SMELTER, Pb  
Mgr: L J Black  
Supt: James H Vose  
(See Ariz, Calif, Colo, Idaho,  
Mont, New Mex, N Y, Okla,  
Utah, Wash)

# AMERICAN ZINC CO OF ILLINOIS, SUBSID OF AMERICAN ZINC, LEAD & SMELTING CO

Hillsboro  
SMELTING & PROCESSING PL, Zn  
Supt: H R Wampler  
Met Div Supt: J F Clark  
Mgr: H W Curry  
Gen Foreman: H J Collett  
Mech Eng: M A Bonadurer  
Met: Oscar Russell  
Assay: Orville Rutledge  
Annual Prod:  
12,800 tons Amer prod zinc oxide  
2,700 tons Pb prod zinc oxide  
7,150 tons slak zinc  
(See Amer Zinc-III, Texas; Amer  
Zinc, Tenn, Amer Zinc, Lead &  
Smelt, Wash)

# CALUMET & HECLA, INC

People's Gas Bldg, 122 S  
Michigan Ave, Chicago  
Pres: E R Lovell  
VP: Oper: H Y Bassett  
(See Mich)

# EAGLE Picher CO, MNG & SMELTING DIV

Galena  
Mgr: C C Dale  
GRAHAM MINE, undergr, Zn, Pb  
GRAHAM CENTRAL MILL, Flot  
Idle  
(See Ariz, Colo, Kans, Nev, Okla,  
Utah, Wisc)

# HICKS CREEK FLUORSPAR MINING CO

Elizabethtown  
Pres: John C Humm  
VP: Ted Joiner  
Sec: Clyde L Flynn, Jr  
Treas: M I Conn  
DOUGLAS MINE, Pope Co, CaF<sub>2</sub>  
Prod: 50 tons

# INLAND STEEL CO

First Nat'l Bank Bldg, Chicago 3  
Pres: Joseph Block  
VP: Raw Materials: P D Block, Jr  
Sec: Graydon Megan  
Mgr: Ore Mines: R D Satterley  
Asst Mgr, Ore Mines: H M Graft  
Geol: A T Broderick  
Safety Dir: E C Leonard  
(See Mich, Minn)

# INTERNAT'L MINERALS & CHEMICAL CORP

20 N Wacker Dr, Chicago 6  
Pres: Louis Ware  
Exec VP: J P Margeson, Jr  
VPs: G W Moyers, M H Lockwood,  
A N Into, P D V Manning, J T R  
Bishop, N J Dunbeck, Howard F  
Roderick  
VP & Treas: A R Cahill  
VP & Gen Counsel: E D McDougal,  
Jr  
VP & Chief Engr: T M Ware  
Corp Sec: C M Edwards  
Purch Agt: J P Burrows  
(See Ariz, Colo, Fla, Me, Miss,  
Mont, N Mex, N Y, N C, Okla,  
S Dak, Tenn, Wyo)

# MATTHIESSEN & HEGELER ZINC CO

LaSalle  
LASALLE WORKS, Zn  
Pres: H D Carus  
VP & Gen Mgr: C R MacDrayne

# Sec: E H Carus

Gen Supt: R Wasskowiak  
Met: Miller  
Elec Engr: A Lundberg  
Mech Engr: H Larson  
Safety Engr: V Novak  
Purch Engr: A La Flamme  
SMELTER (Hawth)  
Capacity: 20,000 tons per yr  
Asst Supt: P Miller

# MINERVA OIL CO, MNG DIV

Myers Bldg (Box 53), Eldorado  
Pres: Joseph Desloge  
Sec: Berkley Jones  
Gen Mgr: Gill Montgomery  
Geol: C W Shaw  
Purch Agt: S J Kelly  
MINERVA #1 MINE, Cave-in-Rock,  
undergr, CaF<sub>2</sub>, Zn  
Prod: 325 tons per day  
Mine Supt: C F Callahan  
Mine Foreman: Joseph Doggett  
250-TON FLOT MILL  
Mill Supt: O E Anderson  
Assayer: C B Bash  
CRYSTAL MINE, Rt 1, Elizabeth-  
town, 4 mi NW of Cave-in-Rock,  
undergr, met grade CaF<sub>2</sub>  
Prod: 540 tons  
Plant Mgr: I V Robertson  
Mine Supt: D B Holbrook  
400-TON HMS & FLOT MILL  
Mill Supt: D C Spees  
Mill Foreman: James Fralley  
Shop & Yd Foreman: Tracy Barnard  
JEFFERSON MINE, 5 mi W of  
Rosiclare, undergr, CaF<sub>2</sub>  
Idle  
ROSE CREEK MINE, 3 mi E of  
Herod, undergr, CaF<sub>2</sub>  
Idle

# MORTON SALT CO

120 S LaSalle St, Chicago 3

# OZARK-MEHONING CO, MNG DIV

Box 57, Rosiclare  
VP & Gen Mgr: J G Trewartha  
Purch Agt: C W Sohowsky  
DEARDORFF, W L DAVIS #2,  
NORTH GREEN, EAST GREEN,  
OXFORD MINES, undergr, fluorspar,  
Zn, Pb  
Gen Supt: H E Baile  
Geol: A G Johnson  
Met: R A Sperberg  
Elec Eng: H D Davis  
Mine Supt: Edward Powell, Jr  
Asst Mine Supt: V G Smith  
Mine Foreman: J H Scott  
Prod: 400 tons  
400-TON FLOT MILL, at mine  
Mill Supt: Ralph Herman  
Asst Mill Supt: Paul Baker, P N  
Hobbs  
Assay: Walter Millhouse  
(See Colo, Okla)

# ROSICLARE LEAD & FLUORSPAR MNG CO

Rosiclare  
Pres: J Hiechen  
VP: Stanley Holland  
Sec-Treas: A T Souder  
Purch Agt: J C Lay  
MINE, undergr, fluorspar  
Gen Mgr: A H Cronk  
Elec Eng: Percy Howard  
Mine Supt: O Jackson  
Prod: 300 tons  
300-TON FLOT MILL, at mine  
Mill Foreman: H Johnston  
Assay: James Crotsier

# TRI-STATE ZINC, INC

35 Pine St, New York 5, N Y  
Pres: C O Lindberg  
VP: M H Loveman  
Sec: J H Nicholls  
ILLINOIS OPERATIONS, Box 1011,  
Galena  
Gen Mgr: V C Allen  
Geol: Paul Herbert  
MINE, undergr, Zn, Pb  
Prod: 1,000 tons  
1,000-TON FLOT MILL, at mine  
(See N Y)

# U S GYPSUM CO

209 W Adams, Chicago 6  
Ch of Bd: C H Shaver  
Pres: O M Knudsen  
VP: Mgr: C W Deangry  
VPs: H F Sadler, Edward Rembert,  
J H Noid, E W Carey  
Sec & Asst Treas: A W Irwin  
Asst Secs: B A Lang, L W Austin  
Asst Treas: G W Clarke  
Ch Engr, Mines: J F Harvard  
(See Calif, Colo, Iowa, Mich, Mont,

New Mex, Nev, Okla, Tex, Utah,  
Va, Wash)

# VICTOR CHEMICAL WORKS

141 W Jackson Blvd, Chicago 4  
Pres: Rodhe Weigel  
(See Calif, Fla, Mont)

# ZONOLITE CO

135 La Salle St, Chicago  
Pres: A T Kearney  
VPs: John B Myers, Dayton L  
Prouty, Daniel J Boone, Joe A  
Kelley, W J Bein  
Purch Agt: Leo O Franz  
(See Mont)

# IOWA

# CELOTEX CORP

Fort Dodge  
MINE & PLANT, gypsum  
(See Okla)

# CERTAIN-TEED PROD CORP

Fort Dodge  
MINE & PLANT, gypsum  
(See Mich, N Y, Penn, Tex, Utah)

# DURANGO MINING CO

Durango  
Mgr: J E Miller  
MINE, undergr, Pb  
Under devel

# NAT'L GYPSUM CO

Fort Dodge  
QUARRY & PLANT, gypsum  
P Mgr: R G Tarbell  
Quarry Supt: J B Pitts, Jr  
(See Kans, Mich, N Y, Ohio, Penn,  
Tenn, Tex, Va)

# U S GYPSUM CO

Fort Dodge  
Works Mgr: M E Davidson  
MINE, surface, gypsum  
(See Calif, Colo, Ill, Mich, Mont,  
New Mex, Nev, Okla, Tex, Utah,  
Va, Wash)

# WASHEM GYPSUM PROD CO

Fort Dodge  
PLANT, gypsum

# KANSAS

# AMERICAN ROCK CRUSHER CO

3700 Rainbow Blvd, Roseville,  
Kansas City 5  
UNDERGR WINKING, Hamskone

# AMERICAN SALT CORP

630 N Y Life Bldg, Kansas City 6  
SALT MINE, Lyons

# AMER SMELT & REFIN CO

Baxter Springs  
Gen Supt: W C Ball  
MINE, undergr, Zn, Pb  
Idle  
(See Ariz, Calif, Colo, Ida, Md,  
Mo, Mont, Neb, N J, New Mex,  
New York, Okla, Tex, Utah, Wash)

# BARTON SALT CO

Hutchinson  
Pres: C H Humphreys  
SALT MINE

# C & M MINING CO

Box 289, Baxter Springs  
Supt: H G Milligan  
ST LOUIS #4, IMBEAU MINES,  
undergr, Zn, Pb  
200-TON GRAY-FLOT MILL  
Idle

# CARLEY SALT CO

Hutchinson  
3 SALT MINES

# DINES MINING CO

Baxter Springs  
BLUE MOUND GRAY FLOT MILL,  
Zn, Pb  
Prod: 30,000 tons per year  
Supt: H G Weidman

**EAGLE PITCHER CO., MNG & SMELT DIV**  
Candia, Ohio  
LUCKY JEW, MNG JOHN BLHARE,  
GRACE B. WEBBER, WESTSIDE,  
K E JARRETT, KANSAS MINES,  
Zn, Pb  
LEAD SMELTER  
Galea  
Mgr: Fred Clearman  
(See Ariz, Colo, Ill, Nev, Ohio,  
Utah, Wisc)

**FEDERAL MNG & SMELT CO**  
(See Amer Smelt & Refn Co)

**FRANCES REEVE LIMESTON**  
Box 30, Columbus  
UNDERGR WINGS, Galea,  
limestone

**GARNETT ROCK CO**  
Garnett  
Owner: E F Bromahan  
UNDERGR WINGS, limestone

**HARRIS MINING CO, INC**  
440 E 12th, Baxter Springs  
Pres & Gen Mgr: Loren Keenan  
VP & Supt: A T Harris  
Sec-Treas: Rola Nichols  
GOLDEN ROD & No 34 MINES, 8 mi  
W of Baxter Springs, undergr, Zn,  
Pb  
Prod: 700 tons  
Foreman: Frank Poole  
(See Okla)

**HELEN H MINING CO**  
Box 115, Baxter Springs  
Mgr: Claude Jones  
MINES, Baxter Springs, Kans &  
Fischer-Candia, Ohio areas, undergr,  
Zn, Pb  
(See Ohio)

**HENDERSON, JOHN**  
330 E Broadway, Miami, Okla  
MINE, Wilbur (subleased from Eagle  
Pitcher), undergr, Zn, Pb

**INDEPENDENT SALT CO**  
415 Packers Ave, Chicago, Ill  
SALT MINE  
Kansopolis

**G W KERFORD QUARRY CO**  
Rt 1, Atchison  
UNDERGR WINGS, limestone

**LITTLE DEN MNG CO**  
c/o Kenneth Childress,  
Box 225, Baxter Springs

**LORING QUARRIES CORP**  
Baxter Springs  
UNDERGR WINGS, Loring

**MARK TWAIN MNG CO**  
Box 241, Fisher, Ohio  
Mgr: W L Childress  
JARRETT MINE, Zn, Pb

**MID-CONTINENT LEAD &  
ZINC CO**  
181-1/2 Military, Baxter Springs  
Pres: Kenneth Childress  
MINES, WRIGHT LAND GROUP

**MISSION MNG CO**  
c/o Van Walters, Route 1,  
Columbus

**MORTON SALT CO**  
120 S La Salle, Chicago 3, Ill  
SALT MINE  
Hutchinson

**NAT'L GYPSUM CO**  
Medicine Lodge  
MINE & PLANT, gypsum  
Mine Supt: S J Shepler  
(See Iowa, Mich, N.Y., Ohio, Pa,  
Tex, Va)

**NATIONAL LEAD CO**  
Box 30, Baxter Springs  
THE STATE OPERATIONS  
Gen Supt: Geo B Schaefer  
BALLARD, HARTLEY, SHANKS,  
KEITH, SWALLEY, SMITH,  
CLARK MINES, undergr, Zn, Pb  
1,100-TON GRAY-FLOT MILL  
(See Ark, Calif, Kans, Mo, Nev,  
Tex)

**PEARLESS QUARRIES**  
Turner  
MINE, Turner, undergr

**ROANOKE MINING CO**  
Baxter Springs

**HOMESTAKE & HARTLEY MINES**  
1 mi W of Baxter Springs, undergr,  
Zn, Pb  
Mine Foreman: Raymond Harper  
Idle  
(See Okla)

**S S & C MINING CO**  
Blue Mound  
MINE, Zn, Pb  
Opera: Ben Clark & Assoc  
Idle  
(See Okla)

**THOMPSON STRAUSS  
QUARRIES**  
Rt 2, Kanasa City 6  
MINE, Morris, undergr, limestone

**TIGER MINING CO**  
Trecee  
FOX MINE, 1 mi W of Trecee,  
undergr, Zn, Pb  
Mine Foreman: Otis Burns  
Idle  
(See Okla)

**W M & W MINING CO, INC**  
Box 238, Baxter Springs  
Pres & Gen Mgr: O K Tucker  
VP: Ralph Chambers  
Sec & Geol: Ferrel E Williams  
250-TON FLOT MILL, 2 mi NW of  
Baxter Springs  
Mill Supt: Harry Lanham  
(See Okla)

**CERTAIN-TEED PROD CORP**  
120 E Lancaster Dr, Ardmore,  
Okla  
MINE, Blue Rapids, undergr, Gypsum

## KENTUCKY

**CRIDER, J WILLIS,  
FLUORSPAR CO**

Martins  
Gen Mgr: B M Travis, Box 26,  
Clayton  
McNEELY & MARBLE MINES,  
6 mi NE of Fredonia, undergr,  
CaF<sub>2</sub>  
Prod: 35 tons  
100-TON GRAY-FLOT MILL  
Mexico

**KENTUCKY FLUORSPAR CO**  
Martins  
VP & Gen Mgr: R H Fraser  
MINE, Martins, CaF<sub>2</sub>  
Idle

**MARIMEX FLUORSPAR CO,  
INC**  
Martins  
Oper: Wm Howard Crider  
McNEELY MINE, Fredonia, 3 mi  
NE of Fredonia, undergr, CaF<sub>2</sub>  
Mine Supt: Redge Winters  
Asst Supt: Dave Winters  
Idle

**PENNSYLVANIA SALT MFG  
CO**  
Martins  
100-TON FLOT MILL, Mexico

**ROBERTS & FRAZER**  
Martins  
MINES, Livingston Co  
Idle

**INLAND STEEL CO**  
Martins  
FLUORSPAR OPER  
Supt: W G Robinson  
(See Mich, Minn & Ill)

## LOUISIANA

**FREEPORT SULPHUR CO**  
181 E 42nd St, New York 17, NY  
LOUISIANA DIV, mines at Grande  
Eauille, Garden Island Bay, Bay  
Stu Klaine, S  
VP & Div Mgr: E Y Price  
(See N.Y., Tex)

**JEFFERSON LAKE SULPHUR  
CO**

1408 Whitney Bldg, New Orleans  
Pres: E H Walot, Jr  
VP: H A Wilson  
VP & Sec: Cass J Ferry  
STARKE DOKE, Calcasieu Parish,  
La  
(See Tex)

## MAINE

**BERYLLIUM DEVEL, INC**  
Reading, Penn  
Pres: M J Donachie  
SCOTTY MINE, Be  
Berksh  
Gen Mgr: Stanley A Feltler

**INTERNAT'L MIN & CHEM  
CORP**  
29 N Wacker Dr, Chicago, Ill  
FELDSPAR MINE  
(See Ariz, Colo, Fla, Ill, Mo,  
Miss, N.H., New Mex, N.Y., N.Dak,  
Ohio, S.Dak, Tenn, Va)

## MARYLAND

**AMERICAN SMLT &  
REFIN CO**  
Baltimore  
BALTIMORE PLANT  
Mgr: J G Leckie  
(See Ariz, Calif, Colo, Ida, Kans,  
Mo, Mont, Neb, N.J., New Mex, NY,  
Ohio, Tex, Utah, Wash)

**DAVISON CHEM CORP, THE**  
101 N Charles St, Baltimore 3, Md  
Pres: M G Geiger  
VP: W E McClark  
Sec: M C Koop  
Treas: J C Marks  
Purch Agt: C C Dorsey  
(See Fla)

**HARFORD TALC & QUARTZ  
CO, INC**  
Bst Air  
Pres: E I Dinning, Jr  
VP & Purch Agt: E I Dinning, III  
Sec: John B Dunning  
Gen Mgr: Alfred W Culham  
DUBLIN 1-4 MINES, surface, talc,  
soapstone, quartz, asbestos, feldspar  
20-TON MILL  
Dublin

## MASSACHUSETTS

**COPPER RANGE CO**  
24 Federal St, Boston 10  
Pres: M P LeCros  
VP: N B Ewald  
Sec: J R Achroyd  
Treas: D M Goodwin  
Purch Agt: S H Bailey  
(See Copper Range, Mich, White  
Pine Copper Co, Mich)

**NORTON CO**  
1 New Bond St, Worcester  
Pres: M P Higgins  
Exec VP: R F Gow  
Treas: W J Magoe  
Sec: M H Filsworth  
Elec Engr: E S Person  
Safety Engr: M A Ingalls  
Purch Agt: G D Seguin

**U S GYPSUM CO**  
Framingham  
MINE, surface, limestone  
(See Calif, Colo, Conn, Ill, Iowa,  
Mich, Mont, Nev, N.Y., Tex,  
Utah, Va, Wash)

**U S SMELTING REFINING  
& MNG CO**  
75 Federal St (Box 2137)  
Boston  
Pres: F S Muloch  
(See Alaska, Ariz, New Mex, Utah)

**WHITE PINE COPPER CO**  
24 Federal St, Boston 10

Pres: Morris F LaCroix  
VP: P F Beaudin  
Sec: J A Achroyd  
Treas: D M Goodwin  
Purch Agt: C W Woolsey  
(See Mich)

## MICHIGAN

**CALUMET & HECLA, INC**  
CALUMET DIV  
1 Calumet Ave, Calumet  
VP & Gen Mgr: A S Krumer  
Purch Agt: W A Garz  
Dir, Ind & Pub Rel: H D Stott  
AHMECK, ALLOUEZ, CENTENNIAL,  
IROQUOIS, KERSARGE, PENINSULA  
& SENECA MINES, Calumet, undergr,  
Cu

Dir, Mng: C A Campbell  
Ch Geol: T M Broderick  
Proj & Sp Engr Mgr: P H Ostlander  
Mech Proj Engr: H H Spencer  
Elec Proj Engr: A W Hill  
Civil & Mng Eng: H S Donald  
Prod: 7,400 tons  
6,000-TON GRAY-FLOT MILL  
Dir, Mng: R K Poul  
CALUMET & HECLA SMELTER  
Hubbell, 5 rev Cu furnaces  
Dir, Smelt & Ref: K F Farley  
Prod: 90,000,000 lbs cu-yrly  
OSCEOLA #6, 13

Calumet  
Dir, Mng: C A Campbell  
MINE, undergr, Cu  
Under devel  
CALEDONIA MINE, Greenland,  
undergr, Cu  
Exploit  
(See Ill)

**CERTAIN-TEED PRODUCTS  
CORP**  
Box 4, Grand Rapids  
Pres: R G Libars  
VP: P E Fischer  
Sec: A O Graves  
Treas: Mellor Hargreaves  
Gen Mgr: A H Teneushof  
Asst Mgr: E Reverski  
Purch Agt: J I Trolley  
GRAND RAPIDS MINE, 4 mi SW  
Grand Rapids, undergr, gypsum  
Mine Supt: R Nelson  
Asst Mine Supt: Ralph Neubauer  
MILL, at mine  
Mill Supt: F M Bigelow  
(See Penn)

**THE CLEVELAND-CLIFFS  
IRON CO, ORE MNG DEPT**  
Ishteping  
Gen Mgr: G J Holt  
MICHIGAN OPER,  
Ishteping  
Mgr, Mich Mines: J S Westwater  
Dist Supt, Undergr Mines:  
H H Korpinen  
Dist Supt, Surface Mines: H C  
Swanson

**OHIO-WEBSTER MINE**, Baraga  
Co, surface, Fe  
Asst Supt: W Rembold  
SPICE-VIRGIL MINE, Iron Co,  
undergr, Fe  
Supt: J M Halvahl  
BUNKER HILL MINE, Marquette  
Co, undergr, Fe  
Supt: T A Kaupola  
CAMBRIA-JACKSON, Marquette Co,  
undergr, Fe  
Supt: W R Atkins  
CLIFFS SHAFT, Marquette Co,  
undergr, Fe  
Supt: O Marjama  
LLOYD MINE, Marquette Co  
undergr, Fe  
Supt: W R Atkins  
MAAS MINE, Marquette Co, undergr,  
Fe  
Supt: C R Sundeen  
MATHER MINE, Marquette Co,  
undergr, Fe  
Asst Supt, "A" Shaft: Oil Dawe  
Asst Supt, "D" Shaft: R L Tobie  
Asst Supt, "A" & "D" Shafts: A J  
Andelin

**TILDEN MINE**, Marquette Co, surface,  
Fe  
Asst Supt: W Rembold  
HUMBOLDT MINE, Marquette Co,  
surface, Fe  
Supt: E Lindroos  
REPUBLIC MINE, Marquette Co,  
surface, Fe  
Under devel  
(See Minn, Ohio)

## COPPER RANGE CO

## MINING DIV

## Palmdale

Gen Mgr: D E Moulds  
 Mast Mech: W J Andrews  
 Elec Engr: M G Meyers  
 CHAMPION MINE, 10 mi S of  
 Houghton, undergr, Cu  
 Mine Supt: V J Capobianco  
 Asst Mine Supt: P Vertnar  
 Mine Engr: Peter Steinen  
 Safety Engr: C Campo  
 Prod: 1,200 tons  
 FLOT MILL, Freda  
 Supt: Ross Gansble  
 Foreman: Matt Salminen  
 (See Mass)

## GLOBE IRON CO

Jackon, Ohio  
 Ch of Bd: E A Jones  
 Pres: J H Jones  
 VP: J W Morgan  
 Sec: W Plancuff  
 Gen Mgr: W R Doell  
 GLOBE-CORNELL MINE, 2 mi  
 N of Iron Mt, surface, Fe  
 Prod: 100 tons

## HANNA COAL &amp; ORE CORP

Iron River  
 Mgr, Mich Mines: S E Quayle  
 Gen Mgr: R C Fish  
 Gen Supt: W F Shimmers  
 Geol: A E Walker  
 Mech Engr: Warren W Jamar  
 Elec Eng: Carl W Anderson  
 Purch Agt: G E Tromblay  
 WAUSICA MINE, undergr, Fe  
 Mine Supt: J D McAuliffe  
 Mine Captain: W A Lundwall  
 Prod: 1,000 tons  
 (See Minn, Ohio)

## HANNA IRON ORE CO

Iron River  
 Mgr, Mich Mines: S E Quayle  
 Gen Mgr: R C Fish  
 Gen Supt: W F Shimmers  
 Geol: A E Walker  
 Mech Engr: Warren W Jamar  
 Elec Engr: Carl W Anderson  
 Purch Agt: G E Tromblay  
 CANNON MINE, Stambaugh,  
 undergr, Fe  
 Mine Supt: G A Koehler  
 Prod: 700 tons  
 HAWATHA MINE, Iron River,  
 undergr, Fe  
 Mine Supt: J R Quayle  
 Prod: 2,000 tons  
 HOMER MINE, Iron River,  
 undergr, Fe  
 Mine Supt: James Ivers, Jr  
 Prod: 1,500 tons  
 WAKEFIELD MINE, Wakefield,  
 surface, Fe  
 Idle  
 (See Minn, Ohio)

## INLAND STEEL CO

IRON ORE OPER  
 Mgr, Raw Materials Dept:  
 C B Jacobs, Chicago  
 Mgr, Ore Mines: R D Satterley,  
 Indianapolis  
 Asst Mgr, Ore Mines: H M Graff,  
 Indianapolis  
 SHERWOOD MINE, Iron River  
 Supt: E Warren Peterson  
 BRISTOL MINE, Crystal Falls  
 Supt: W P Reed  
 MORRIS MINE,  
 Jackson Twp  
 Mine Supt: R W Edwards  
 CAYIA MINE, Crystal Falls  
 Supt: W P Reed  
 GREENWOOD MINE,  
 Indianapolis  
 Supt: W J Abi  
 (See Ill, Minn)

## JACKSON IRON &amp; STEEL CO

Iron Mt  
 BRADLEY MINE, Fe  
 Prod: 22,000 tons per year  
 (Operated by Edward C Bradley &  
 Sons)  
 (See Ohio)

## JONES &amp; LAUGHLIN STEEL

## CORP, MICHIGAN ORE DIV

Negaunee  
 Mgr: R W Braund  
 TRACY MINE, Negaunee, undergr,  
 Fe  
 Supt: H L Belmont  
 Asst Supt: H J Cristaty  
 Machine Mch: A D Lenn  
 Engr: W A Simons  
 Under devel  
 (See Minn, N Y, Pa)

## NATIONAL GYPSUM CO

325 Duane Ave  
 Buffalo 2, N Y  
 QUARRY & PLANT, National  
 City, gypsum  
 Pl Mgr: C H Hill  
 Quarry Supt: R H Allen  
 (See Iowa, Kans, N Y, Ohio, Tex,  
 Va)

## NORTH RANGE MNG CO

Negaunee  
 Pres & Gen Mgr: R S Archibald  
 Ch of Bd: F P Book  
 VP: R Q Archibald  
 VP, Oper: F J Haller  
 Sec: E S Holmgren  
 Ch Elec: G H Peterson  
 Gen Supt: J C Kirkpatrick  
 Purch Agt: P A Alexander  
 BOOK MINE, Alpha  
 Supt: J C Kirkpatrick  
 Capt: Charles Coole  
 CHAMPION MINE, Champion  
 Oper Engr: M J Martin  
 Capt: Bryon Farragh  
 WARNER MINE, Amasa  
 Supt: J C Kirkpatrick  
 Capt: C A Clements  
 LEONIDAS MINE, Eveleth  
 Supt: A J Ouscott  
 Capt: Ward Brown  
 PENOKEE, Ironwood  
 Supt: J Zurew  
 Capt: Wm Bianchi

## PICKARDS MATHER &amp; CO

GOODECK DISTRICT, Ironwood  
 Gen Supt: W A Knoll  
 Asst Gen Supt: C D Bailey  
 Dist Mng Engr: J L Sharrer  
 Ch Clerk: A W Bulinski  
 Dist Safety Supt: George Gerry  
 YOUNGSTOWN MINES CORP,  
 NEW PORT MINE, Ironwood,  
 undergr  
 Supt: H L Schieber  
 YOUNGSTOWN MINES CORP  
 ANVIL-PALMS-KEEWENAW MINE,  
 Bessemer, undergr  
 Supt: R L Jose  
 PURITAN MINING CO, PETERSON  
 MINE, Bessemer, undergr  
 Supt: H L Schieber  
 Asst Supt: P P Torrens  
 PLYMOUTH MINING CO, LOOMIS  
 MINE, Wakefield, surface  
 SUNDAY LAKE IRON CO, SUNDAY  
 LAKE MINE, Wakefield, undergr  
 Supt: R D Hodge  
 PALMER MINING CO, VOLUNTEER  
 MINE, Palmer, surface  
 MENOMINEE DISTRICT, Cispain  
 Supt: W E Sponson  
 Dist Mng Engr: R Brewer  
 Ch Clerk: S A Brew  
 VERONA MNG CO, BUCK &  
 LAWRENCE MINES, Cispain, under-  
 gr  
 FORTUNE LAKE MINE, PICKARDS  
 MATHER & CO, Managing Agents,  
 Crystal Falls, surface  
 (See Minn, Wis)

## REPUBLIC STEEL CORP

Republic Bldg,  
 Cleveland 1, Ohio  
 TOBIN MINE, Crystal Falls,  
 undergr, Fe  
 Mine Supt: E H Anderson  
 Mine Foreman: Emil Johnson  
 Ch Engr: E W R Butcher  
 Mech & Elec Engr: Victor Crego  
 Assay: J H Meyer  
 Prod: 500 tons per year  
 (See Ala, Minn, N Y, Ohio)

## RICHMOND IRON CO

Iron River  
 Mgr, Mich Mines: S E Quayle  
 Gen Mgr: R C Fish  
 Gen Supt: W F Shimmers  
 Geol: A E Walker  
 Elec Engr: Carl W Anderson  
 Purch Agt: G E Tromblay  
 RICHMOND MINE, Palmer,  
 surface, Fe  
 Mine Supt: Lawrence O Collins  
 Mine Engr: J H Morrow

## U S GYPSUM CO

300 W Adams St,  
 Chicago, Ill  
 ALABASTER, surface, gypsum  
 Works Mgr: M N Van Ornum  
 (See Calif, Colo, Ill, Iowa, Mass,  
 Mont, New Mex, Nev, Ohio, Tex,  
 Utah, Va, Wash)

## U S STEEL CORP, OLIVER

## IRON MNG DIV

## GOODECK DISTRICT

Ironwood  
 Supt: F W Denton, Jr  
 Asst Supt: R D Lindberg  
 Ch Mng Engr: J C Howbert  
 Ch Chemist: H P Achats  
 Shop Foreman, Maintenance,  
 J L Dibble  
 GENEVA MINE, Ironwood, undergr  
 Asst Mng Capt: L Gribble  
 I J Watson  
 (See Ala, Minn, Mont, N Y, Tenn,  
 Utah)

## WHITE PINE COPPER CO

White Pine  
 VP & Project Mgr: Harold B  
 Ewald  
 VP & Asst Gen Mgr: H D Freeman  
 VP, Oper: D E Moulds  
 Geol: J R Rand  
 Mech Engr: C Saff  
 Elec Engr: J A Roller  
 WHITE PINE MINE, Cu  
 Mine Supt: Richard F Moe  
 Mine Foreman: Larry Gifford  
 Mine Engr: Charles F Haberman  
 Prod: 10,500 tons per day  
 FLATIRON MILL,  
 Mill Supt: Walter A Hamilton  
 Mill Foreman: L Bowman  
 SMELTER, REVERB  
 Smelter Supt: Robert C Wilson

## MINNESOTA

## BUTLER BROS

Hibbing  
 Gen Mgr of Mines: R W Whitney  
 MINES, Cuyuna Range, Minn, Fe,  
 An  
 ALGOMA RESERVE, Cuyuna,  
 Idle  
 HUNTER, WHITMARSH RESERVE  
 Wolford Twp,  
 Idle  
 KONA, FED RESERVE, Cuyuna  
 Idle  
 MERRITT GROUP, MANGANESE-  
 TROMMOLD  
 Idle  
 LINES, Mesabi Range, Minn, Fe  
 ALEXANDRIA RESERVE, Balhan  
 Twp  
 Idle  
 AROMAC, THEODORE RESERVE  
 Nashauk Twp,  
 Idle  
 BLERAIL RESERVE, Hibbing  
 Idle  
 CAROL, LARUE, MACE #2  
 RESERVE, Nashauk, Nashauk  
 Twp,  
 Idle  
 GALBRAITH, GALBRAITH ANNEX  
 MINE, Nashauk Twp  
 HARRISON, HALOBE, ROADLEY,  
 NORTH HARRISON, NORTH  
 HARRISON ANNEX, QUINN GROUP  
 MINE, Nashauk, Nashauk Twp,  
 Cooley  
 PATRICK ANN, PATRICK ANNEX,  
 KEVIN, LANGDON, DAVID, SNYDER  
 GROUP MINE, Cooley, Greenway  
 Twp  
 WYMAN MINE, Nashauk Twp  
 MIDWEST GROUP MINE, Nashauk  
 Nashauk Twp  
 MACKILLICAN MINE, Nashauk  
 (See Ohio)

## CHARLESON IRON MNG CO

Power Bldg, Box 335, Hibbing  
 Pres & Gen Mgr: E F Remer  
 VP: C H Remer  
 Purch Agt: A T Steele  
 CHARLESON CONC, Fe  
 Supt: J C Henry  
 Prod: 1,000 tons

## THE CLEVELAND-CLIFFS

## IRON CO, ORE MNG DEPT

Hibbing  
 Gen Mgr: G J Holt  
 MINNESOTA OPER, Hibbing, Fe  
 Mgr, Mine Mines: H J Leach  
 Gen Supt: W A Pukhild  
 AGNEW MINE, Hibbing, undergr  
 Supt, Undergr: Mel Vint  
 SARGENT MINE, Keweenaw, undergr  
 & surface  
 Supt, Surface: Paul J Sorenson  
 MINNESOTA MINE, Nashauk, surface  
 WASH PLANT, H M & PLANT  
 Supt: William LeClair

## HILL-TRUMBLE MINE, marble,

surface  
 WASH & H M S PL, Calumet  
 Supt: A E Hill  
 HOLMAN-CLIFFS MINE, Tazewell,  
 surface  
 Supt: J J Foucault  
 WASH & H M S PLANTS, Coleraine  
 Supt: J J Foucault  
 WAKLESS MINE, Dahl, surface  
 Idle  
 CANISTEO MINE, Coleraine,  
 surface, wash, H M S Plant  
 Supt: Ronald Pearson  
 (See Mich, Ohio)

## CONSUMERS ORE CO

Hibbing  
 Gen Mgr of Mines: R W Whitney  
 MINES, Mesabi Range, Fe  
 SARGENT RESERVE, Calumet  
 Idle  
 (See Ohio)

## COONS, E W, CO

Grant St, Hibbing  
 Pres: W C Cohoe  
 VP: W E Wilson  
 Sec: A I Foster  
 Ch Eng: H M Hart  
 Gen Supt of Mines: Duane S Myers  
 LINCOLN "A", SUDNEY, JULIA,  
 S COMMODORE MINES, Virginia  
 surface, Fe  
 GENOA SPARTA, Eveleth, surface,  
 Fe

## COONS PACIFIC CO

Box 27, Eveleth  
 Pres: W C Cohoe  
 Supt: Don C Kimball  
 CUSTOM IRON-ORE CONCEN  
 (See Pacific Isle Mng Co)

## DOUGLAS MINING CO

Hibbing  
 Gen Mgr Mines: R W Whitney  
 MINES, Mesabi Range, Fe  
 DOUGLAS, DUNCAN GROUP  
 MINE, Balhan Twp  
 NEVILLE RESERVE, Stunis Twp,  
 Idle  
 SHENANGO RESERVE, Chisholm  
 Idle  
 (See Ohio)

## HALEY-YOUNG MNG CO

2223 First Ave, Hibbing  
 Pres: E A Young  
 Sec: G D Haley  
 ELBERN MINE, 3 mi SE of  
 Fraser, surface, Fe  
 Supt: Leo Cashen  
 Foreman: Phillip Solomson

## HANNA COAL &amp; ORE CORP

Gen Mgr of Minn Mines:  
 R W Whitney, Hibbing  
 MINES, Fillmore Co, Fe  
 G DLY, H DLY, BREHMER,  
 FENSTERMACHER, FREEMAN,  
 MADLAND, HAFNER, R JOHNSON  
 LASSELL, LEON J McNEE, MEYER  
 NASH, K OLSON, R OLSON,  
 RATHBURN, RICK, SIMON, C TART,  
 W TART,  
 Fortville Twp, Bloomfield Twp,  
 Beaver Twp  
 MINES, Cuyuna Range, Fe & Mn  
 ALSTEAD, ARKO, NORTH HILL-  
 CREST GROUP MINE, Ironton  
 AUNE SISTERS, PONTIAC GROUP  
 RESERVE, Trommald,  
 Idle  
 CROFT, MEACHAM GROUP  
 RESERVE, Crosby  
 Idle  
 FEIGH MINE, Ironton

## HUNTINGTON MINE, Ironton

LAND & COL RESERVE, Wolford  
 Twp,  
 Idle

## NORTHLAND RESERVE, Rabbit

Lake Twp,  
 Idle

## LOUISE MINE, Irondale Twp

MALLEN MINE, Irondale Twp

## MARCOO MINE, Trommald

RICE RIVER RESERVE,  
 Morrison, Spencer Twp, Aitkin  
 Co

## SECTION 6 MINE, Irondale Twp

SNOWSHOE MINE, Irondale Twp

## SOUTH HILLCREST MINE,

Ironton

MINES, Mesabi Range, Fe

ALLEN ROSSUM RESERVE,  
 Greenway Twp,  
 Idle

ARGONNE, LEACH, PERRY  
 GROUP MINES, Nashauk Twp,



**KEOWA**  
**HARTMAN, MARK GROUP**  
**RESERVE, Bess Brook Top**  
**MASCHKA RESERVE, Greenway Top,**  
**Ida**  
**SCOTT RESERVE, Greenway Top,**  
**Ida**  
**SILVER, ALPENA GROUP RES,**  
**Virginia, unaggregated Top 18 1/2,**  
**Ida**  
**SCOTT**  
**(See Mich, Ohio)**

**HANNA IRON ORE CO**  
 Gen Mgr of Minn Mines  
 R W Whitney, Hibbing  
**MINES, Cuyuna Range, Fe, Ma**  
**BARBOWS RESERVE, Crow Wing**  
**Top,**  
**Ida**  
**CUYUNA, BURN, POLK, TABERT**  
**GROUP RES, Oak Lake Top**  
**Ida**

**R W I RESERVES, Crow Wing Top,**  
**Long Lake Top, Mohay Lake Top,**  
**Oak Lake Top**  
**Ida**  
**GLOWIA, ZENO RES, MANGANESE,**  
**Ida**

**OMAHA RES, Oak Lake Top**  
**Ida**  
**BOWE RES, Ironside Top**  
**Ida**  
**WALKER RES, Mohay Lake Top**  
**Ida**  
**YAWKEY RES, Crosby, Cuyuna**  
**Ida**

**FORTMOUTH GROUP MINE,**  
**Crosby**  
**MINES, Mesabi Range, Fe**  
**RECKFELT, PINNAGE,**  
**LUNDOKIAN, HATCHER,**  
**PAKAGAMU GROUP RES,**  
**Bess Brook Top**  
**Ida**  
**PARCEL 3 RESERVE, Coleraine**  
**Ida**  
**BILLING RESERVE, Fraser**  
**Ida**  
**SECTION 10 MINE, Shasta Top**  
**(See Mich, Ohio)**

**HANNA ORE MINING CO**  
 Hibbing  
 Gen Mgr of Mines: R W Whitney  
**MINES, Mesabi Range, Fe**  
**BOVEY-DULATT, PARCO**  
**GROUP RES, Grand Rapids, Top,**  
**Ida**  
**BRAY, GORDON, GORDON ANNEX,**  
**MESABI CHIEF, MISS 43, STEIN**  
**GROUP MINE, Neahwah Top,**  
**Keewauw**  
**RESERVE, Mt Iron,**  
**Ida**

**DUCKEY, JENNISON GROUP**  
**MINE, Arbo Top**  
**ENTERPRISE MINE, Virginia**  
**FRANKIE, SHIRAS GROUP RES,**  
**Ruhl**  
**Ida**

**NORPAC, IMPRO B, SARGENT**  
**GROUP RES, Hibbing**  
**NORTH WRO RES, Shasta Top**  
**Ida**  
**WABCON, THORNE GROUP RES,**  
**Ruhl, Great Scott Top**  
**(See Ohio)**

**INLAND STEEL CO, IRON**  
**ORE OPER**  
 Ironston

**ARMOUR No 1 & No 2 MINES**  
 Supt: A T Anderson  
**(See Mich, Ohio)**

**JESSIE N MINING CO**  
 Grand Rapids  
 Pres: E W Hallett  
 VP: R N McGiffert  
**JESSIE MINE, 1 mi NE of Grand**  
**Rapids, surface, Fe**  
 Mine Supt: W D McElwaine  
 Mine Foreman: L R Sewell  
 Mine Engr: J J Walker  
**WASH PLANT**  
 Mill Foreman: A Anderson

**JONES & LAUGHLIN STEEL**  
**CORP, MINN ORE DIV**  
 Virginia

Mgr: H F Rullberg  
 Asst to Mgr: C H Stoenman  
 Ch Asst: W S Toussaint  
 Proj Engr: W P O'Connor  
 Sen Geol: T E Stephenson  
 Western Dist Supt: P W Kruse  
 Western Dist Supt: J F Linden  
**MINES, Mesabi Range, surface,**  
**Fe**  
**HILL ANNEX MINE AND MILL,**  
**Chisholm**  
 Dist Supt: J F Linden

Mine Supt: R O Brandon  
 Mill Foreman: R L Abercrombie  
**LONGYEAR MILL & MINE,**  
**Hibbing**  
 Dist Supt: J F Linden  
 Mine Supt: Wm Ball  
**LONG-GREENWAY MINE,**  
**Chisholm**  
 Dist Supt: J F Linden  
 Mine Supt: R O Brandon  
 Under devel  
**COLEMAN MINE & MILL,**  
**Virginia**  
 Dist Supt: P W Kruse  
**SCHLEY-PETIT MINE & MILL,**  
**Gilbert**  
 Dist Supt: P W Kruse  
 Mine Supt: H W Gillespie  
**WESTNORTH MINE & MILL,**  
**Mesabi**  
 Dist Supt: P W Kruse  
**(See Mich, NY, Pa)**

**JUNIOR MINING CO**  
 Virginia  
 Pres: A B Tomassich  
**HECTOR MINE, Mesabi, Mesabi**  
**Range, surface, Fe**

**MISSCO MINING CO**  
 (Operating subsidiary of Haley-Young Mining Co)  
 Keewauw  
**MISSISSIPPI #1 MINE near**  
**Keewauw, Mesabi Range, surface**  
**Ida**

**MOORE, W S CO**  
 Brooklyn Rd, Hibbing  
 Pres: W E Moore  
 Sec: H A Nelson  
 Gen Mgr: R E Reese  
 Gen Supt: John Johnson  
 Geol: J V Everett  
 Mech Engr: J M Madson  
 Office Mgr: R J Kennedy  
**PRINDLE MINE, 1 mi W of Virginia,**  
**surface, Fe**  
 Prod: 2,500 tons  
 Mine Supt: S E Ketur  
**HEAVY MEDIA MILL,**  
 Mill Supt: W F McDermott  
**JUDSON MINE, 1 mi S of Ruhl,**  
**surface, Fe**  
 Prod: 1,500 tons  
**JUDSON CRUSHER**  
**MARISKA MINE, 1 mi NE of Gilbert,**  
**surface, Fe**  
 Prod: 3,000 tons  
**PILOT ANNEX MINE, 4 mi NE of**  
**Mt Iron, on face, Fe**  
**HANNA MINE, 4 mi NE of Mt**  
**Iron, surface, Fe**  
**GILBERT SILVER MINE, 1/2 mi**  
**NE of Gilbert, surface, Fe**  
 Mine Supt: John Johnson  
**MARGARET MINE, 1/2 mi W of**  
**Ruhl, surface, Fe**

**MORTON ORE CO**  
 Hibbing  
 Gen Mgr of Mines: R W Whitney  
**MINES, Mesabi Range, Fe**  
**MORTON, SOUTH EDDY GROUP**  
**MINE, Bess Brook Top**  
 Mine Supt: L M Bredford  
 Asst Mine Supt: M A Englund  
 Mine Foreman: John Gwaert

**OGLEBAY NORTON & CO**  
 The Hanna Bldg  
 Cleveland, Ohio  
**NORTHERN OFFICE**  
 300 Christie Bldg, Duluth  
 VP: Frank J Smith  
 Ch Mng Engr: D S Young  
 Elec Engr: W W Viebahn  
 Ind Rel Dir: N J Gersmenden  
 Purch Agt: A J Windt  
**ST JAMES MINING CO, Aurora**  
 Mgr: Oglebay Norton & Co  
**ST JAMES MINE, Aurora**  
**surface, Fe**  
 Supt: B L Knudsen  
 Gen Foreman: T H Trishey  
**(See Ohio, Montreal Mng Co in**  
**Wisc)**

**PACIFIC ISLE MNG CO**  
 (Includes Rodman Mng Co)  
 2521 First Ave, Hibbing  
 Pres: H N Harrison  
 Gen Mgr: John D Boettje, Jr  
 Supt: Arno O Tuomala  
 Gen Counsel: E T Ringer  
 Mgr Devel: R H Chisholm  
 Ch Eng: A T Vellela  
**MINES, Mesabi Range, surface**  
**YUKA, LAMORETTE, UNO-KERR**  
**GP, CROXTON-DREW-SYME,**  
**NORTH SHIRAS, WACOOTAH,**  
**MINCONA-LARKIN, MASSABE MTH**  
**(South Leese), EMMETT, VIVIAN-**  
**GRHAM #1**

**PLANTS, York Wash Pl, North**  
**Una Concan**  
**(See Coons Pacific Co, Pittsburgh**  
**Pacific Cal)**

**PHILBIN MNG CO**  
 1200 Leader Bldg, Cleveland  
 Ohio

**WEGON-SOUTH LONGYEAR GP**  
 Box 720, Hibbing  
 Gen Mgr: R W Whitney  
 Asst Gen Mgr: B M Address  
 Gen Supt: R C Wallace  
 Mech Engr: G Wuggum  
 Elec Engr: F B Rohan  
 Parsh Agt: G H Shields  
**MINE, surface, Fe**  
 Mine Supt: S C Mahon, Jr  
**WASH PLANT**  
 Cap: 450 tons per hr

**PICKARDS MATHER & CO**  
 700 Sellwood Bldg, Duluth 2  
 Gen Mgr: A D Chisholm  
 Asst Gen Mgr: J C Metcalf  
 Mgr of Eng: O L Youch  
 Mgr of Mines: E L Joppa  
 Oper Asst: A L Johnson  
 Ch Mech & Elec Engr: A C

Butterworth  
 Purch Agt: D A Brunau  
 Super of Safety & Ind Relations:  
 E A Amundson  
**HIBBING DIST, Mesabi Range,**  
**Hibbing, Fe**  
 Gen Supt: E J Fearing  
 Asst Gen Supt: W L Bradt  
 Dist Mng Engr: R W Sullivan  
 Ch-Clerk: W S Home  
 Dist Safety Supr: C E Hager

**CRITE MINING CO, ALBANY**  
**MINE & WASHING PL, Hibbing,**  
**surface & undergr**  
 Supt: T R Tregeno  
**HOYT MINING CO, SCRANTON**  
**MINE, CRUSHING & WASHING PL,**  
**Hibbing, surface**  
 Supt: E C Spanberg  
**MAHONING ORE & STEEL CO,**  
**MAHONING MINE, Crushing,**  
**Hibbing, surface**

Supt: W D Webb  
**UTICA MNG CO, CARMEL CARSON**  
**LAKE MINE & CRUSHING PL,**  
**Hibbing, surface**  
 Supt: I T Lang  
**BALKAN MNG CO, DANUBE MINE**  
**& BENEFICIATION PL, Bovey,**  
**surface**

Supt: W L Thome  
**WESTERN MINING CO, WEST HILL**  
**MINE & BENEFICIATION PL, Grand**  
**Rapids, surface**  
 Supt: L M Becker  
 Asst Supt: A V Lehtinen  
**TIOGA #2 MINE**  
 Supt: I M Becker

Asst Supt: R R Kirvan  
**EAST MESABI DIST, BIWABIK**  
**Gen Supt: T C Thielman**  
**CORSCA IRON CO, CORSCA MINE**  
**& CRUSHING & WASHING PL, Ekcor,**  
**surface**  
 Supt: D E Coughtin  
**BIWABIK MNG CO, BIWABIK MINE**  
**& BENEFICIATION PL, Biwabik,**  
**surface**

Supt: J M Shields  
**LAKE MNG CO, EMBARRAS MINE**  
**& CRUSHING PL, Biwabik, surface**  
 Supt: G C Watts  
**ERIE MNG CO, TACONITE OPER,**  
**Aurora**  
 Supt: R F Kohn  
**ELY DIST, Vermilion Range, Ely**  
 Supt: D S Richards  
**VERMILLION MNG CO, ZENITH**  
**MINE, Ely, undergr**  
 Supt: R S Richards  
**CUYUNA DIST, Cuyuna Range,**  
**Crosby**

Gen Supt: J P Schenmel  
 Dist Mng Engr: George Chamberlin  
 Chief Clerk: Matt Kayler  
**CUYUNA ORE CO, HAINOMEN**  
**MINE & CRUSHING PL, Crosby,**  
**surface**  
 Supt: H F Sears  
**SAGAMORE ORE MNG CO,**  
**SAGAMORE MINE, CRUSHING &**  
**DRYING PL, Riverton, surface**

Supt: H F Sears  
**WOUNGTOWN MINE CORP**  
**RABBIT LAKE MINE & CRUSHING**  
**PL, Crosby, surface**  
 Supt: H F Sears  
**(See Mich, Wisc)**

**PIONEER MNG CO**  
 Box W, Biwabik  
 Pres: Patrick Butler  
 VP: Frank S Bergstrom

Ch of Bd: Emmett Butler  
 Sec: F J McArthur  
**MARY ELLEN MINE, 1/4 mi W**  
**of Biwabik, surface, Fe**  
 Mine Supt: H F Mansuet, Jr  
 Mine Foreman: Frank Press, Jr  
 Prod: 500,000 tons conc per year  
**H M S PL**

**PITTSBURGH PACIFIC CO**  
 2521 First Ave, Hibbing  
 Pres: H N Harrison  
**BRADFORD, CHATACO MINES,**  
**Mesabi Range, surface, Fe**  
**(See Pacific Isle Mng Co)**

**REPUBLIC STEEL CORP**  
 204 Sellwood Bldg, Duluth  
 Dist Mgr: F H Cash  
 Ch Mng Engr: E W R Butcher  
 Ch Mech & Elec Engr: I V Crogo  
 Supt, Safety & Ind Rel: E C Morris,  
 Jr  
**SUSQUEHANNA MINE, Hibbing,**  
**surface**  
 Supt: M G Woodie  
 Engr: S V Smith, Jr  
**ST PAUL MINE, Keewauw, surface,**  
**Fe**  
 Supt: M G Woodie  
 Engr: S V Smith, Jr  
**STEVENSON MINE, Stevenson,**  
**surface, Fe**  
 Supt: M G Woodie  
 Engr: S V Smith, Jr  
**(See Mich, NY, Ohio)**

**RESERVE MNG CO**  
 405 Christie Bldg, Duluth  
 Purch Agt: E J Woods  
 Dist Pub Rel: Edward Schmid  
**BAHBITT MINE, Babbitt, surface, Fe**  
 Mgr, Oper: R J Lindsey  
 Gen Supt: Floyd Erickson  
 Mine Supt: A F Torrance  
 Peletiz Supt: K M Haley  
 Crush & Concan Supt: E M Furness  
**PILOT PLANT, Babbitt, taconite**  
**PLANT, Silver Bay, taconite**  
 Under constr  
**(See Ohio)**

**RHODE & FRYBERGER**  
 Box 779, Hibbing  
 Partners: J O Rhode,  
 R M Fryberger  
**TROY MINE, Eveleth Mesabi Range,**  
**surface, Fe**  
**BOEING MINE, Hibbing, Mesabi**  
**Range, surface, Fe, Wash Pl**  
**PENNINGTON MINE, Ironston,**  
**Cuyuna Range, surface, Fe,**  
**HMS Pl**

**ST JAMES MNG CO**  
 (See Oglebay Norton & Co)

**SKUBIC BROS CO**  
 708 5th Ave N, Virginia  
 Pres: Tony Skubic  
 VP & Purch Agt: Edward Skubic  
 Sec-Treas: Frank Skubic  
**VIRGINIA MINE, Eveleth, 3 mi**  
**S of Virginia, surface, Fe**  
 Gen Supt: Frank Skubic  
 Mine Foreman: Luther Swanson  
 Ida  
 3,000-TON HMS MILL, Ags

**SNYDER MINING CO**  
 1201 Alvarado Bldg, Duluth  
 VP & Gen Mgr: O A Sundness  
**MESABI RANGE HQ OFFICE**  
**Chisholm**  
 Gen Supt: C O Rodstrom  
 Ch Engr: A C Borgeson  
 Asst Ch Engr: Rudolph Mar  
 Mech Supt: E F Eldam  
 Safety Engr: F J Sullivan  
 Purch Agt: C J Hathaway  
**WEBB MINE, Hibbing, surface,**  
**Fe**  
 Mine Supt: J J Massey  
 Mine Foreman: A E Des Postel  
 Mine Engr: John Munter  
 Prod: 4,000 tons  
**WHITESIDE MINE, Duhl, surface,**  
**Fe**  
 Mine Supt: R M Baker  
 Mine Foreman: Albert Stibel  
 Mine Engr: Dean Swain  
 Prod: 7,500 tons  
**CRUSHING PLANT**  
**(See Penn)**

**SOUTH AGNEW MNG CO**  
 Hibbing  
 Gen Mgr of Mines: R W Whitney  
**MINES, Mesabi Range, Fe**  
**SOUTH AGNEW, AGNEW #1**  
**GROUP MINE, Ironston Top**  
 Mine Supt: L M Bredford



## Mississippi — Missouri

Asst Mine Supt: M A Englund  
(See Ohio)

## SYLVIA DEE MNG CO

Hibbing  
Pres: David D Haley  
MICHAEL MINE, Buhl, Mesabi  
Range, surface, Fe

## UNITED STATES STEEL

CORPORATION, OLIVER  
IRON MINING DIVISION  
Wolverin Building, Duluth 2  
Pres: R T Elstad  
VP-Oper: J E Macnamer  
VP-Sales & Planning: W N  
Matheson, Jr  
VP-Mineral Devel: L J Severson  
Asst Sec: U S STEEL CORP.  
H P Clarke  
W A Newman

Treas: R L Larson  
Compt: R D Henley  
Mgr, Mng Eng: R A Boberg  
Mgr, Geol Invest: R W Macdon  
Mgr, Beneficiation: A T Koenen  
Supervisor of Ore Movement:  
F J Perry

Ch Eng: C N Bailey  
Dir of Ind Rel: P O Hawkinson  
Purch Agt: G A Engel  
Ch Grader: G H Shartsch  
EASTERN DISTRICT Virginia,  
Minnesota  
Gen Supt: I O N Swanson  
Asst Gen Supts: J M Johnson  
L S Campbell  
Supt of Maintenance: J A Vittum  
Ch Mng Eng: J T Nolan  
Ch Chemist: I R Lerohl  
CANTON MINE, Mesabi Range,  
surface, Fe  
Supt: D Hartley  
EVELETH MINES, Mesabi Range,  
surface, Fe  
Supt: K H McInnis  
Asst Supt: E J E Olson  
MT IRON MINE & PILOTAC MINE,  
Mesabi Range, surface, Fe  
Supt: I H C Rubow  
Asst Supt: L E McKenzie  
ROUCHELEAU MINE, Mesabi Range,  
surface, Fe  
Supt: E V Nelson  
Asst Supt: F D Hoover  
PIONEER MINE, Vermilion Range,  
undergr, Fe  
Supt: L E Dick  
SOUTHERN MINE, Vermilion Range,  
undergr, Fe  
Supt: E M Holmes  
MT IRON CONCENTRATOR, Mesabi  
Range,  
Supt: I H C Rubow  
Asst Supt: L E McKenzie  
EXOTICA PLANT, Mesabi Range,  
agglomerating  
Supt: M V Mickle  
Asst Supt: G R Wynne  
PILOTAC PLANT, Mesabi Range,  
Experimental taconite pilot plant  
HIBBING-CHISHOLM DUST, Hibbing,  
Minn  
Gen Supt: J H Harding, Jr  
Asst Gen Supt: J Chisholm  
Supt of Maintenance: C R Burton  
Ch Mng Eng: M R Sermon  
Ch Chemist: W E Holliday  
HULL-RUST MINE, Mesabi Range,  
surface, Fe  
Supt: N G Holland  
Asst Supt: W J McGuire  
SHERMAN MINE, Mesabi Range,  
surface, Fe  
Supt: M J Foremark  
Asst Supt: E C Silver  
PILLSBURY MINE, Mesabi Range,  
surface, Fe  
Supt: H M Pickering  
MONTROE MINE, Mesabi Range,  
surface, Fe  
Supt: W Bean  
DOUGHERTY & MORRIS MINES,  
Mesabi Range, undergr & surface,  
Fe  
Supt: W Bean  
FRASER MINE, Mesabi Range,  
undergr, Fe  
Supt: A C Solen  
HULL-RUST CONCENTRATOR,  
Mesabi Range  
Supt: N G Holland  
Asst Supt: W J McGuire  
CAMISTEO DISTRICT, Coleraine,  
Minnesota  
Gen Supt: E A Friedman  
Asst Gen Supt: M E Johnson  
Supt of Maintenance: A C Prich  
Ch Mng Eng: I E Battles  
Ch Chemist: E R Bechtel, Jr  
ARCTURUS MINE, Mesabi Range,  
surface, Fe

Supt: H P Bolton  
KING MINE, Mesabi Range,  
surface, Fe  
Supt: J H Harrison  
Asst Supt: A F Savage  
FLUMMER MINE, Mesabi Range,  
surface, Fe  
Supt: W W Beebe  
TROUT LAKE CONCENTRATOR,  
Mesabi Range  
Gen Plant Foreman: V V Ahola  
ARCTURUS CONCENTRATOR,  
Mesabi Range  
Gen Plant Foreman: T O Olson  
PLUMMER CONCENTRATOR,  
Mesabi Range  
Gen Plant Foreman: W L Zeiter  
(See Ala, Mich, Mont, Penn, Tenn,  
Utah)

YOUNG, E A INC  
2223 First Ave, Hibbing  
Pres: E A Young  
VP & Supt: Hein Kempainen  
Sec: D D Haley  
MINNEAPOLIS MINE, 2 mi E of  
Virginia, Mesabi Range, surface &  
undergr, Fe  
Foreman: A N Heikkila

## ZONTELLI BROS, INC

Ironton  
Pres: Emil Zontelli  
VP: Henry Zontelli  
Sec-Treas: Anne V Stang  
Gen Mgr: N E Hill  
Gen Supt: Henry Zontelli  
Met: John Simons  
Geol: Elton LaSart  
Mech Engr: Francis Chase  
Elec Engr: Don Doshan  
Purch Agt: Ernest Kutzner  
VIRGINIA MINE, N of Ironton,  
Cuyuna Range, surface, Fe  
4,000-TON VIRGINIA PL.  
TROMMALL  
MINNESOTA MINES  
GRAHAM #1 MINE, Mesabi Twp,  
Mesabi Range, surface, Fe  
MANGAN-JOAN MINE, Irondele,  
Cuyuna Range, surface, Fe  
MERRITT LEAN ORE STOCKPILE,  
Trommald, Cuyuna Range  
MANUEL MINE, Crosby, Cuyuna  
Range, surface, Fe  
2,500-TON MANUEL PL, Crosby  
(See Wis)

## MISSISSIPPI

## AMERICAN COLLOID CO

Merchandise Mart Bldg,  
Chicago 54, Ill  
ABERDEEN MINE, surface,  
benzonia  
Aberdeen  
Supt: Edward G Birkholz  
Prod: 150 tons  
ABERDEEN MILL  
Cap: 250 tons  
WHITE SPRINGS MINE, surface,  
benzonia  
White Springs (P O at Aberdeen)  
Supt: Edward G Birkholz  
Prod: 150 tons  
(See Ill, S Dak, Wyo)

## INTERNAT'L MIN &amp; CHEM

CORP  
Smithville (P O Amory)  
Mgr: Ivan Greene  
Supt: Maurice Clay  
SOUTHERN BENTONITE MINE  
(See Ark, Colo, Fla, Ill, N Mex,  
N Dak, Ohio, S Dak, Tenn, Va)

## MISSOURI

## ALLIED CHEM &amp; DYE

CORP, OEN CHEM DIV  
Owensville  
MISSOURI CLAY FIELDS  
Supt: H A Parker  
(See Colo, New Mex, N Y, Va)

SMITH, HARRIS  
2920 Main St, Joplin  
BAM MINE, undergr, Pb  
Supt: Harris Smith

## CARTER, J E. MINING CO

Potosi  
Pres & Gen Supt: Geo I Carter  
VP: Wm Carter  
Sec: G F Cresswell  
MNG OPER, Wash Co, surface,  
barite

## CURTIS, L

Fletcher  
BARITE PTS, Wash Co, Pb, Zn

## DALE MINING CO

811 Kentland, Necohe  
Partners: D F & G E Klepinger &  
J A Worley  
Elec Engr: F E Griffith  
Mech Engr: Lawrence Trenshaw  
MINES, DUNGOY, SHINN, ROBBIN,  
PATTERSON, Stark City & Arena,  
undergr, Pb, Zn  
Mine Foreman: Boyd Mitchell  
Prod: 125 tons  
600-TON GRAV-FLUT MILL, Stark  
City  
Mill Foreman: Frank Crab

## DeSOTO MINING CO

226 S Main St, DeSoto  
MINE & MILL, surface, barite

## DICKEY &amp; REYNOLDS

Fulton  
MINE & MILL, Wash Co,  
surface, barite

## DILLINGER, J R

Box 408, Potosi  
MINE & MILL, Wash Co,  
surface, barite

## FEDERAL MNG &amp; SMELTING

CO  
(Wholly-owned subd of Amer  
Smelting & Refining Co)  
DUTENWEG MINE, Jasper, Pb, Zn  
Idle  
(See Idaho, Kans, Ohio)

## FRJO MINING CO

3101 Winthrop Ave, Fort Worth,  
Texas  
EXPRESS MINE, Nech City, 13 mi  
N of Joplin, surface, Zn, Pb  
Supt: Henry Sexton  
Idle  
4,000-TON GRAV-FLUT MILL,  
Pb cell  
Mill Supt: Henry Sexton

## HORNBY BROS

Potosi  
MINE, 1 mi S Potosi, Wash Co,  
undergr, barite  
200-TON GRAV MILL  
Mill Foreman: H R Dale, Ronnie  
Blair

## HOWELL MINING CO

Mineral Point  
MINES, Wash Co, barite

## LAWRENCE CO MNG &amp;

MLG CO  
316-N Joplin Ave, Joplin  
VP: Dave Mattee  
MINES, Lawrence Co, Zn, Pb  
GRAV-FLUT MILL  
Idle

## MINE LA MOTTE CORP

(Div of St Joseph Lead Corp)  
250 Park Ave, N Y 17, N Y  
Pres: Andrew Fletcher  
VP: C M Chapin, Jr  
Sec: Robert Bennett  
MINE LA MOTTE, undergr, surface,  
Pb

## Bonne Terre

Div Mgr: A E Jones  
Div Supt: F F Redfield  
Prod: 2,000 tons  
2,000-TON PLOT-GRAY MILL  
Fredericktown

## MONSANTO CHEM CO

St Louis 4  
Ch of Bd: Edgar M Quoney  
Pres: Charles Allen Thomas  
ORGANIC DIV  
Gen Mgr: J L Christian  
Div Engr: W T Durrett  
MINES & PL, Monsanto, Tenn,  
elemental phosphorus  
Pl Mgr: Edward J Buck  
(See Ida, Tenn)

## NAT'L LEAD CO

BARGED DIV  
FOUNTAIN FARM, Potosi,  
surface, barite  
WET GRIND MILL

Supt: E L H Sackett  
(See Ark, Calif, Nev, Tex)

## NAT'L LEAD CO

ST LOUIS SMELT & REFIN DIV  
Box 351, Fredericktown  
(See Ark, Calif, Nev, Tex)

## OZARK ORE CO

IRON MOUNTAIN MINE, undergr,  
iron ore  
Gen Supt: F H Lee  
Geol: Wm LaBounty  
Mine Foreman: Bruno Sestito  
Mine Engr: R Pillard  
3,000-TON GRAV MILL  
Mill Supt: A E Cameron  
Assay: J W Trolour  
(See M A Hanna Co, Ohio)

## POTTER SIMS MINES INC

Box 299, Joplin  
JASPER & SNAPP MINES,  
Jasper Co, Zn, Pb  
SUCKER FLAT & SNAPP MILLS  
Idle

## ST JOSEPH LEAD CO

250 Park Ave, N Y 17, N Y  
Pres: Andrew Fletcher  
VP's: C M Chapin, Francis Cameron,  
R J Mechin  
VP-Treas: G I Bridgden  
Sec: Robert Bennett  
BONNE TERRE, LEADWOOD,  
DESLONG, FEDERAL, INDIAN  
CREEK MINES  
Bonne Terre  
Div Mgr: E A Jones  
Gen Supt, Oper: R T Murrill  
Ch Geol: J S Brown  
Mech Supt: Bert L Deal  
Met: E J Haug  
MINES, undergr, Pb, Zn  
Gen Mine Supt: L I Turley  
Asst Gen Mine Supt: C B Davis  
B T Wyckoff  
Supt, Indian Cr Mine & Mill:  
L W Casteel

Prod: 22,000 tons  
FLOT-GRAY MILLS  
Mill Supts: H R Stahl, M N Dunlap,  
H A Hoffman, E B Hall  
Asst Mill Supt: E J Krohreska  
BLAST FURNACE  
Hercules  
Div Mgr: W T Isbell  
Asst Supt: J O McLeellan  
(See N Y, Penn)

## ST LOUIS MNG &amp; MLG CORP

Box 508, Joplin  
Pres: Edwin B Meisner  
Sec: Edwin B Meisner, Jr  
Purch Agt: C H Isaacs  
MINE, 6 mi NW of Joplin,  
undergr, Zn, Pb  
250-TON CUSTOM MILL  
Idle

## SHENANDOAH-DIVES MNG CO

615 Finance Bldg, Kansas City  
Pres: J W Oldham  
(See Colo)

## SILVER STREAK MNG CO

c/o Clarence Zuvekas, Joplin

## SUPERBAR CO

Potosi  
Pres: Geo L Carter  
VP: G F Cresswell  
Sec: Floyd Carter  
Gen Supt: Russell Degonia  
GRINDING MILL, Mineral Point

## TERRACE MINING CO

Fulton  
Pres & Gen Mgr: Dall B Groves  
VP: Julia E Floyd  
Sec: Robert D Evans  
TERRACE MINE, 7 mi N Potosi  
surface, barite  
Mine Foreman: Harry D Patterson  
Prod: 50 tons  
75-TON GRAV MILL  
Mill Foreman: Harry D Patterson

## WHALEY &amp; SCOTT

MNG CO, INC  
Mineral Point  
MINE & MILL, Wash Co, barite

## WOLF, H A

Idle  
MINE & MILL, Wash Co, surface,  
barite

## ZUVEKAS MNG &amp; MLG CO

2611 E 15th St, Joplin

# MONTANA

## ACE GP #1

Darby  
Oper: Joe Hart & Morano  
MINE, 6 mi W of Ana, WO<sub>2</sub>,  
Co, As

## ALLIED METALS, INC

415 Sprague Ave, Spokane, Wash  
Pres: Wm Tunka  
VP: Frank Mangio  
Gen Mgr: J P Arns  
ALPS MINE, Wiedom, Au, Ag,  
Cu, Pb, Zn, Mn, placer &  
undergr  
Engr: A C Arnold  
Idle

## ALPS MNG & MLO CO

Box 1364, Missoula  
Pres: J P Smith  
VP: Ed Schrieber  
Sec-Treas: R T Slinger  
ALPS MINE & ARGO MINE, 23 mi  
SW of Clinton, undergr, WO<sub>2</sub>,  
Au, Ag  
150-TON GRAY-FLAT MILL,  
Brewster  
Idle

## AMERON MINING CO

Box 372, Coeur d'Alene, Idaho  
Pres: A B London  
Sec-Treas: C M J. Sullivan  
MINE, near Moran, Au, Ag, Cu  
Mons Agt: Joe Brooks, Wesen  
Under devel

## AMERICAN CHROME CO

1 Monticmery St  
San Francisco 4, Calif  
Pres: Henry A. Sullivan  
Gen Mgr: John Eley  
Sec: Willie A. Swan  
MOUNT CHROME MINE, Wyo,  
49 mi SE of Columbus, undergr,  
chromite  
1,000-TON GRAY MILL  
Prod: 1,000 tons

## AMERICAN MACHINE & METALS, INC, TROUT MNG DIV

Phillipsburg  
Pres: J C Vanderpyl  
VP: C W Anderson  
Gen Mgr: L B Manning  
Asst Gen Mgr: Roy McLeod  
Sec: Alphonse Kemison  
Treas: H T McMeekin  
Gen Sup: Roy V Hamilton  
Geol: D Y Moschler  
TROUT-ALOUQUIN GROUP, 3 mi  
E of Phillipsburg, undergr, MnO<sub>2</sub>,  
Ag, Zn, Pb, MnCO<sub>3</sub>  
Mons Presman: Thomas Furtle  
Prod: 150 tons  
50-TON GRAY & MAGNETIC CONC  
MILL, Phillipsburg, Kenneth Baker  
(See N Y)

## AMERICAN SMELTING & REFINING CO

JACK WAITE MINE, Sanders Co,  
Pb, Zn (See Idaho)  
Mgr: J B Bost  
EAST HELENA PL, East Helena,  
Custom Lead Smelter  
Mgr: Joseph T Ray  
Supt: Stanley M Lonn  
(See Ariz, Colo, Calif, Ida, Ill,  
Nev, New Mex, N Y, Tex, Utah,  
Wash)

## ANACONDA ALUMINUM CO

Columbia Falls  
Pres: R B Caples  
VP: C H Steele  
Sec-Treas: C E Moran  
Purch Agt: A B Harris  
REDUC PL, Columbia Falls, Al  
Mgr: H G Satterthwaite  
Prod Supt: J P Smith  
Mech Supt: C J Lundberg  
Scheduled prod: 120,000,000 lbs

## ANACONDA COPPER MNG CO

Butte  
VP, Chg West Oper: C B Steele  
Gen West Comm: J T Finlan  
Gen Mgr, abt Mng Oper: A C  
Bisley  
Asst to VP: F A Linforth  
Asst to VP: J M Dickey, Jr

Asst Sec-Treas: W E Quigley  
Asst Sec: J D Murphy  
Mgr of Mines: E J Renard, Jr  
Gen Supt of Mines: A R Sims  
Consult Geol: R H Sales  
Asst Ch Geol, North Amer:  
M H Oidel

Ch Geol Dept, Butte,  
E P Shea  
Ch Mng Engr: W A O'Kelly  
Ch Sampler: P K Ramsey  
Ch Eng Research Engr: L V  
Bishop

Ch Moch Engr: H J Kennard  
Mech Supt: P C Jaccard  
Asst Mech Supt: George Lilly  
Elec Supt: I H Stock  
Chrm, Bureau of Safety:  
J L Boardman  
Ch Ventil Engr: J W Warren  
Labor Commissioner: Eugene  
Hogan

Dist Traffic Mgr: R O Erickson  
Ch Assayer: W C Gallagher  
Supt, Withers Sampler:  
L E Margolis

Foreman, Flue Filling Dept:  
Herb Wendell  
Foreman, Precip Pl: J P Ryan  
Foreman, Diamond Drilling &  
Material Handling: C S Mathews  
BELMONT, ORPHAN GIRL & HIGH  
ORE MINES, Butte dist, undergr,  
Cu, Zn

Asst Gen Supt: T H Oase  
Foreman, Belmont: Joseph Cannon  
Foreman, Orphan Girl: Hayman Gibbs  
Foreman, High Ore: John Scott  
MT CON, ANSELMO, STEWARD  
& ORIO MINES, Butte dist,  
undergr, Cu, Zn  
Asst Gen Supt: W B Rossett  
Mine Supt, Mt Con: Y D O'Leary  
Mine Supt, Anselmo: Sam  
Weatherly

Asst Foreman, Steward &  
Original: Bernard Connell  
LEONARD, TRAMWAY, EMMA  
& TRAVONA MINES, Butte dist,  
undergr, Cu, Zn, Mn

Asst Gen Supt: Hale Strook  
Mine Supt, Leonard: Russell  
Powell  
Foreman, Tramway: William  
Trudom

Foreman, Travona: S Hurley  
Foreman, Emma: Wm Kerruish  
BADGER, LEXINGTON & ALICE  
MINES, Butte dist, undergr, Zn  
Asst Gen Supt: Ed Bommer  
Foreman, Lexington: Elmer Norris  
GREATER BUTTE PROJECT,  
KELLEY SHAFT, Butte dist,  
undergr, Cu

Asst Gen Supt: Martin Hamifan  
Asst Gen Supt, Filling Oper: Hale  
Strook

Mons Supt: John Killey  
Foreman, Kelley: Wm Creber  
Ch Layout Engr: A D Reed  
ANACONDA REDUCTION WORKS,  
ANACONDA

Mgr: W E Mitchell  
Asst Mgr: C A Lemmon  
Gen Supt: W A Emmet  
Research Engr: F F Frick  
Asst Res Engr: F L Heiderderr  
Testing Engr: T G Palmer  
Met: R G Hussman  
Ch Chemist: E N Boyce

Mech Supt: L E Larson  
Elec Supt: R P McCurren  
Supt, Const: H P Morris  
Ch Draftsman: E F Dimock  
Supt, Sing & Tings: W F Flynn  
Asst Supt, Sing & Tings:  
J A Grant

Supt, Trammimg & Weighing:  
I C Ochose  
Asst Supt, Tram & Weigh:  
B E Westgaard

Supt, Surf Dept: J F Sladich  
Ch Clerk: W D Martin  
10,000-TON COPPER CONCEN,  
4,000-TON ZINC CONCEN,  
1,500-TON  
ORE CRUSH & CONVEY PL

Supt: J R Moore  
MANGAN CONCEN  
Supt: C F Milkwich

Asst Supt: F A Roeder,  
T J Fisher, B T McDonald  
COPPER SMELTER, 150,000  
tons per year

Supt: J H McCree  
ELECTROLYTIC ZINC PLANT,  
80,000 tons zinc per year

Supt, Elec Zinc Pl: C M  
Holstrom  
Supt, Roasters: F A Salmanson  
Supt, Zinc Electrolyzing Pl:  
K O Seconey

SULFURIC ACID PLANTS, 420  
tons  
60° Bume acid per day  
Supt: M R Hoyt  
Asst Supt: W W Harriety  
TREBLE SUPERPHOSPHATE  
PLANT, 100,000 tons per year  
Supt: M C Heester  
Asst Supt: E P Backward  
MANGANESE MODULIZING PLANT,  
370 Long tons per day  
Supt: F Cole  
FERROMANGANESE PLANT, 3,500  
long tons per month  
Supt: E S Kramlick  
DUST TREATING PLANT, 1,000 tons  
white arsenic per month  
Supt: J J Dougherty  
GREAT FALLS REDUCTION WORKS,  
Great Falls  
Mgr: P S Weimer  
Asst Supt: T K Graham  
Asst Gen Supt: C V Saylor  
Mech Supt: J W Porter  
Met: R J Lopez  
Ch Clerk: W P Snodden  
FURNACE & ELECTROLYTIC  
COPPER REFINERIES, 100,000  
& 150,000 tons per year  
Supt: R H Miller  
Asst Supt: S R Westgard  
ELECTROLYTIC ZINC  
REFINERY, 100,000 tons per  
year  
Supt: O T Weaver  
Asst Supt: R H Balthasar  
EAST HELENA SLAG FUMING PL  
250,000 tons per year  
Supt: E M Baldwin  
Asst Supt: R L Thompson  
(See Calif, Idaho, Nev, N Y,  
Utah)

## ANDERSON BROS

Lexington  
BLUE DICK MINE, Warm Springs  
dist, Vargas Co, Cu  
Under devel

## AZURE MINE

Superior  
Oper: Kermit Sloan  
MINE, Cedar & Trout Cr dist,  
Mineral Co, Ag, Cu, Pb, Zn  
Under devel

## BAILEY, R L

Dodson  
GOLD, SILVER, WAR, BLACK  
EAGLE, HIDDEN TREASURE  
CABIN QUARTZ LODES,  
Little Rocky Mts, 90 mi SW  
of Dodson, Au, Ag, Pb  
Under devel

## BARTCH, PAUL

Dillon  
SILVER HORN MINE, Argenta  
dist, Beaverhead Co, Ag, Pb

## BASIN JIB GOLD MINES, INC

100 Adelaide St, West, Toronto,  
Canada  
Pres: D Denny  
BASIN MINE, Basin, surface &  
undergr, Au, Ag, Pb  
Supt: M R Maskey

## BASIN MINERALS, INC

Basin  
Pres & Gen Mgr: M R Maskey  
VP: John J McGroovy  
Sec-Treas: E L Greenwood  
BENZANZA JACK & FAIR HOPE  
MINES, Basin, undergr, Au, Ag,  
Pb  
Under devel

## BEAVER, WOODROW

Helena  
GOOD FRIDAY MINE, Clancy &  
Lump, Gulch dist, Jefferson Co,  
Ag, Pb  
HELLIE GRANT MINE, Clancy &  
Lump, Gulch dist, Au, Ag, Pb, Zn

## BEAVER TAIL MNG CO

Rhyolitic, Wash  
Pres & Gen Mgr: Henry E Tresh  
VP: Mike Kenney  
Sec-Treas: Louis Trille  
MILLER MINE, Townsend, in  
Greenhorn Gulch, 28 mi NE of  
Townsend, undergr, Au  
Under devel

## BELLVUE MINE

Clinton  
Oper: Terry & Enasott  
MINE, Ca, UO<sub>2</sub>  
Under devel

## BEN HARRISON MINES

Pony  
MINE, 4 mi SW of Pony, Au  
Under devel

## BENNETT MINING CO

Box 1130, Great Falls  
Pres: Carroll R Benesh  
Sec: P A Clarke  
DACOTAH MINE, 1 1/2 mi N  
of Nehart, undergr, Zn, Pb,  
Ag, Au  
Idle  
60-TON FLOT MILL, 1 mi  
from Nehart

## BIG BLUE MINE

Oper: E W Wade & A J Madson,  
Cooke  
MINE, New World dist, Park Co,  
Ag, Cu, Pb, Zn  
Idle

## BIG EIGHT MINE

Troy  
Mgr: Ed McCaffery  
MINE, 6 mi from Troy, Zn, Pb,  
Ag  
Idle

## BLACK & WHITE MNG CO

331 N Ave W, Missoula  
Pres & Gen Mgr: Roger F Little  
BROOKLYN MINE, Marville, 4  
mi N of Phillipsburg, undergr &  
surface, Ag, Pb, Zn, Cu  
Idle

## BLACK TRAVERLER MINE

Pres: C F Bule  
VP: Don Ralston  
Sec-Treas: William Buckley  
BLACK TRAVERLER MINE,  
Nauyas, undergr & surface, Cu, Au  
Gen Mgr: C F Bule  
Asst Gen Mgr: W Buckley  
Gen Supt: Don Ralston  
Under devel

## BLUE DOT MINING CO

Dillon  
Incorps: O Argerbright, M D  
Argerbright, Dillon; E T  
Huechel,  
Missoula  
Under devel

## BOSS-ATLANTIS MINES

Oper: Glen Zorn, C E Vasmaw  
MINE, Cascade Co  
Idle

## BULLWACKER MINE

Helena  
Oper: Norman Rogers  
Box 1719, Helena  
MINE, Summit Valley dist,  
Silver Bow Co, Cu

## BULS MINING CO

1001 E Broadway, Missoula  
Gen Mgr: C F Bule  
Asst Mgr: Don Ralston  
Sec: Wm Buckley  
BLACK TRAVERLER, 8 mi NE  
of Saltese, undergr, Ag, Cu, Au

## BURGESS, STARRETT J

1015 Highland St, Helena  
CAPITOL MINE, Argenta dist,  
Beaverhead Co, Ag, Cu, Pb, Zn  
Zn  
OVERLAND MINE, Montana City  
dist, Jefferson Co, Ag, Pb, Zn  
SCRATCH GRAVEL MINE,  
Scratch Gravel dist, Lewis &  
Clark Co, Au, Ag, Cu, Pb, Zn  
Idle

## BUTTE COPPER & ZINC CO

25 Broad St, New York 4  
Pres: A A Shlare  
VP & Treas: Miles MacDonald  
Sec: B D Cole  
EMMA MINE, 205 Lewisham Bldg,  
Butte, undergr, Mn, Zn, Ag, Pb,  
Au  
Res Engr: Samuel Barker, Jr  
Prod: 1,100 tons  
(Operated by Anaconda Copper Mng  
Co)

## BUTTE COPPER CONS MINES

165 Montana Standard Bldg, Butte  
Pres: C J Trauerman  
JO DANDY GROUP, Radersburg,  
Ag, Pb

## CALEDONIA SILVER-LEAD MNG CO

Lewistown  
DIKITE CLAY MINE  
Under devel

## CANUSCO, INC

Haun  
Pres: B H Pooley  
VP: B C Dempster  
Sec-Treas: E V Dempster  
MINE, Haun, Au, dragline dredge  
Supt: R P Wells  
Idle

CARDONATE MINE, Whitehall  
dist, Pb  
Opr: Lester Lindquist  
Idle

CANYON LODGE MNG CO  
219 Radio Central Bldg,  
Missoula

Pres: R R Wallace  
VP: Roy Wallace  
Sec: Herbert C Fisher  
Geol: Earl F Elstone  
CABLE MINE, Anaconda, 15 mi  
NW of Anaconda, undergr &  
placer, Au, Cu  
100-TON FLOT MILL,  
Idle

CASTLE LEAD & ZINC CO  
Lewistown  
YELLOWSTONE MINE, Castle Mt  
dist, Meagher Co, Ag, Pb, Zn  
Under devel

CHARTER OAK MNG CO  
Box 948, Elliston  
CHARTER OAK MINE, Elliston,  
5 mi S of Elliston, undergr, Pb,  
Ag, Au, Zn  
Gen Mgr: J T Bonner  
Under devel  
50-TON FLOT MILL

COLORADO MINE  
535 E Mercury St, Butte  
Opr: Nick Valovich  
MINE, Summit Valley Dist, Ag

COLUMBIA MNG CO, INC  
604 Placer Hotel Bldg, Helena  
Pres: Jesse Malone  
VP: E W O'Loughlin  
Gen Mgr & Sec: C B Mitchell  
COLUMBIA MINE, at southern  
city limits of Helena, undergr,  
Cu, Ag, Au  
Mine Foreman: Leslie L. Houbert  
Under devel

COMMONWEALTH LEAD MNG  
424 Felt Bldg, Salt Lake City,  
Utah  
Pres: J P Featherstone  
Sec-Treas: D R Featherstone  
CALVIN MINE, Melrose, undergr,  
Au, Ag, Pb, Zn  
Idle

CONSOLIDATION MINE  
Lincoln  
Opr: Earl Neece & Tillotson  
Brow  
MINE, Heddleston dist, Lewis &  
Clark Co, Ag, Pb, Zn  
Under devel

CONTACT MINING CO  
524 Washington St, Butte  
Pres: Peter Antonelli, Sr  
Gen Mgr: Peter Antonelli, Jr  
Met: Frank M Antonelli  
SCRATCH ALL MINE, Phillips-  
burg, undergr, Ag, Zn, Mn, Pb  
HIGHLAND PHOSPHATE MINE,  
Butte, 15 mi S of Butte, undergr  
& surface, phosphate  
Under devel

COPPER CANYON MNG CO  
Hamilton  
Incorpts: Lee Shook, Zella  
Shook & Ernest Shook

COPPEROPOLIS MINE  
Opr: George Cornsley & Sons  
807 S Main St, Butte  
MINE, 15 mi E of White  
Sulphur Spg, Co,  
Idle

CORNUCOPIA MINES CO  
Box 214, Virginia City  
Mgr: Henry Shute  
MINE, Virginia City dist,  
Madison Co, undergr, Au, Ag  
Under devel

CORONADO COPPER &  
ZINC CO  
Butte district  
Eng in Chg: M O Grant  
BLUE HERS GROUP, Western  
Butte dist  
Idle

MINERAL KING MINE, 3 mi N  
of Saltew, Pb, Zn, Ag  
Under devel  
WATER HOLE MINE, near  
Thompson Falls  
Under devel  
(See Ariz, Calif)

CRITCHFIELD, RAYMOND  
Box 132, Whitehall  
PARROTT LEASE, 4 mi NE of  
Whitehall, undergr, Mg, Pb, Ag,  
Cu  
Supt: Albert R Critchfield  
IRONSIDE MINE, 4 mi NE of  
Whitehall, undergr, Pb, Ag  
Supt: A R Critchfield  
Idle

CRUMB, RAY W  
Avon  
HUMDINGER MINE, 21 mi N of  
Avon, undergr, Au, Ag  
Under devel  
4-TON GRAY MILL  
Under devel

CUMBERLAND MINES  
White Sulphur Springs  
Pres: Russell Manger  
VP: Richard Manger  
Mgr: C R Oliphant  
CUMBERLAND MINE, 8 mi  
from Lemay, Pb, Ag, Zn  
Under devel

CUMMINGS, ORAL P  
Dillon  
GOODVIEW MINE, Argenta  
dist, Beaverhead Co, Au, Ag,  
Pb, Zn

DAILY WEST MINE  
Helena  
Opr: Geo Freyler & J M Gill  
MINE, Cataract dist, Jefferson  
Co, Ag, Cu, Pb, Zn

DEER HORN MINE  
Helena  
Opr: William & Tom O'Brien  
MINE, Wilson & Ticer Creeks  
dist, Jefferson Co, Ag, Cu, Pb,  
Zn

DISCOVERY & UNCERTAIN  
MINES  
Canyon Creek  
Opr: Karl Kvasny  
MINES, Canyon Creek dist,  
Lewis & Clark Co, Au, Ag

DIXON COPPER CO  
Ruscon  
Pres: Ed Broholm  
Sec-Treas: R T Maxwell  
BLUE OX CLAIMS, 6 mi SE of  
Dixon, Au, Co  
Idle

DOMESTIC MANGANESE &  
DEVEL CO  
Box 177, Butte  
Pres & Purch Agt: J H Cole  
VP: S A Pumpelly  
Sec-Treas: Cathryn C Keith  
400-TON FLOT MILL with  
modulizing pl for rhodocrosite,  
oxide  
Mill Supt: Carl Martin  
Mill Foreman: D C Sullivan  
Assay: James Higgins

DOUBLE EAGLE TUNGSTEN  
CO  
Box K, Phillipsburg  
Pres & Gen Mgr: W R McClure  
VP: E T Irvine  
Sec-Treas: W I Degenhart  
DOUBLE EAGLE MINE, 12 mi NW  
of Phillipsburg, WO, Cu, Pb, Ag  
Shiftboss: C D McClure  
Under devel

EDNA #2 MINE  
Winston  
Opr: M L Miles  
MINE, Beaver dist, Broadwater  
Co, Au, Ag, Cu, Pb

EDWARDS MINE  
Monarch  
Opr: Thornton & Brazier  
MINE, Barker dist, Judith Basin  
Co, Ag, Cu, Pb, Zn  
Idle

ELDORADO MINING CO  
304 Broadway, Helena  
Pres: O W Pollard  
ELDORADO MINE, 12 mi N of  
Avon, undergr, Cu, Au, Ag  
20-TON FLOT MILL

ELKHORN MNG CO  
Boulder Bank Bldg, Boulder  
Gen Mgr: Fergus C Fay  
ELKHORN & FREE ENTERP-  
RISE MINES, Elkhorn &  
Boulder, undergr, Pb, Ag, Zn,  
Au, U<sub>3</sub>O<sub>8</sub>  
Under devel  
WILSON-ELKHORN MINE, 3 mi  
S of Clancy, undergr, U<sub>3</sub>O<sub>8</sub>  
(See Wash)

ELLISTON CONS MINING CO  
Elliston  
Pres & Gen Mgr: L T Newman  
VP: C L Helgren  
Sec: D E Newman  
Treas: Victor Frost  
LILLY, SURE THING, JULIA &  
COPPER KING GROUPS, 10 mi S  
of Elliston on Telegraph Creek,  
undergr, Au, Ag, Pb, Zn, Cu  
Under devel

EVERGREEN MINE  
Opr: A T Cooper  
Box 142, Helena  
MINE, Rimini dist, Lewis &  
Clark Co, Ag, Pb, Zn

F M S MINING CO  
Garnet  
Opr: Faulkner, Ormesher &  
Sutherland, Missoula  
MITCHELL-MURKIN MINE  
& DUMPS, garnet, Au  
Under devel

FAITH MNG CO  
Box 70, Monarch  
VP & Gen Mgr: T J Vaughan-  
Rhys  
Acting Sec: Blanche Mares  
LIBERTY MINE, B-rker mag  
dist, Ag, Au, Pb, Zn  
Under devel

FAITHFUL GOLD MNG CO  
Dillon  
Gen Mgr & Purch Agt: D V Erwin  
FAITHFUL GOLD, ALICE LEAD &  
BADGER GOLD MINES, Dillon,  
Ag, Au, Pb  
Under devel

FALK METALS CORP  
210 Mercantile Bldg, Denver 2  
BELLE CANYON MINE, Au, Ag  
Under devel

FARROW, TED  
Butte  
SARSFIELD MINE, Summit Valley  
dist, Silver Bow Co, Cu

FERNAND MINE  
Argenta  
Opr: R Nygren & E Dubie  
MINE, Argenta dist, Beaverhead  
Co, Ag, Cu, Pb, Zn

FINLEN & SHERIDAN MNG  
CO  
Box 393, Missoula  
Pres: Jas T Finlen  
VP: L M Sheridan  
Gen Mgr: Jan P Murphy  
BARITA MINE, Greenough, 30 mi  
NE of Missoula, undergr & surface,  
barite  
Mine Supt: Ernie LaPlam  
Prod: 100 tons  
ROLLER MILL, Barite spur  
Mill Supt: C C Cannon

FLEMING, R H & G M  
Dillon  
GOLDSMITH MINE, Argenta dist,  
Beaverhead Co, Ag, Pb, Zn

FLINT, JAMES A & SONS  
Bank Bldg, Pony  
LOUISIANA, CHILE, AMY LOUISE,  
& others, Madison Co, Au, Ag,  
WO, Cu  
TUNGSTEN GROUP, 12 mi S of  
Pony, undergr, surface WO,  
MINING STATES GROUP, WO,  
Idle

FLORENCE COMPANY  
c/o A D Reider, Big Fork  
Pres: A D Reider  
VP: Mary Reider  
Sec: C J Trauterman  
MINUTE MAN GROUP, 5 mi SE  
of Nearth, Pb, Zn, Cu, Ag  
Idle

FULTON, JOHN W  
Canyon Creek  
BIG OX MINE, Maryville dist,

Lewis & Clark Co, Au, Ag,  
Pb, Zn

GALT MINE  
Opr: Louis B Stark, Nearth  
MINE, Montana dist, Cascade  
Co, Au, Ag, Cu, Pb, Zn  
Idle

GARFIELD MINE  
Rimini  
Opr: W A Hall  
MINE, Rimini dist, Lewis &  
Clark Co, Au, Ag, Cu, Zn

GARRISON MNG CO  
Virginia City  
Pres & Gen Mgr: Rupert Garrison  
Sec: Fred H Stewart  
GARRISON MINE, 8 mi S of  
Virginia City, undergr, Au  
Under devel

GILDERSLLEE BROS MINES  
Superior  
Gen Mgr: G M Gildersleeve  
BORANZA GROUP QUARTZ &  
STEMWINDER PLACER MINE,  
17 mi S of Superior, undergr &  
placer, Pb, Ag, Cu, Au  
Idle

GIULIO, JOHN  
SILVER HILL MINE, Jefferson  
Co

GOLCONDA MNG CO, INC  
13 Pittsburg Bk, Helena  
Pres: M I Leydig  
Sec: C P Whitcomb  
BUCKEYE GROUP, 7 mi SE of  
Jefferson City, Au, Ag, Pb  
100-TON CYAN CONC MILL  
Idle

GOLD KING MINE  
Opr: Clarence Woody, Marville  
MINE, Boulder & S Boulder  
dist, Granite Co, Au, Ag, Cu

GOLDEN ANCHOR MNG &  
MLG CO CONS, INC  
1429 Old Nat'l Bank Bldg,  
Spokane, Washington  
Pres, Purch Agt & Gen Mgr:  
H L Newmiller  
VP: Loren Logsdon  
Sec-Treas: Helen N Newmiller  
BIG DICK, BLACKJACK & ASSOC  
PROP, Box 535, Elliston,  
10 mi S & E of Elliston, undergr,  
Pb, Ag, Au, Zn  
Mine Supt: H L Newmiller

GOPHER MINE  
Opr: Arthur A Berg, Ridersburg  
MINE, Cedar Plains dist, Broad-  
water Co, Au, Ag, Cu, Pb, Zn

GOVERNOR TILDEN MINE  
Opr: Rudy Nygren, Dillon  
MINE, Argenta dist, Beaverhead  
Co, Au, Ag, Cu, Pb, Zn  
Under devel

GRANT-JOHNSON MINE  
267 Second Ave, EN, Kalispell  
MINE, 30 mi W of Kalispell,  
undergr, Au, Ag, Cu  
Mgr: Dan J Grant  
Under devel

GRAY JOCKEY MINE  
Opr: Neil Churchill, Butte  
MINE, Vipond dist, Beaverhead  
Co, Ag, Cu  
Under devel

GYPSY MNG CORP  
Box 28, Deer Lodge  
Pres & Gen Mgr: Harley L  
Fulman  
VP: Verne C Hummel  
Sec-Treas: Fred J Wood  
GYPSY QUEEN MINE, undergr,  
WO, Cu, Ag  
Under devel

H & S MINE  
Opr: Frank Bjorn, Grant  
MINE, Chinatown dist, Beaver-  
head Co, Ag, Pb, Zn  
Under devel

HARD MINE  
Argenta  
Opr & Opr: John Hand, Dillon  
Mine Supt: Bill Hand, Dillon  
MINE, Ag, Au, Pb  
Under Devel (prod on car  
weekly)



**BARD LUCK MINE**  
Opr: Ray Ward, Elliston  
MINE, Nigger Hill dist, Powell  
Co, Ag, Pb, Zn  
Under devel

**BARTLEY MINE**  
Opr: Wm Mahama, Belhart  
MINE, Montana dist,  
Cascado Co, Ag, Pb, Zn  
Idle

**BENDERSON TUNGSTEN CO**  
Drummond  
Pres & Gen Mgr: J D Drost  
Sec: M H Bous  
BENDERSON CR PLACER,  
Drummond, 30 mi S of Phillips-  
burg, WO., Au  
Under devel  
50-TON CUSTOM GRAY MILL,  
magnetic separator, Ag

**BI-ONE MINE**  
Opr: Wm Hagman, Boulder  
MINE, Amazon dist, Jefferson  
Co, Ag, Pb, Zn

**BI-RIDGE MINE**  
Twin Bridges  
Owner: J C Roberts  
MINE, 6 mi E of Twin Bridges,  
Au, Ag  
Mgr: James P Reed  
Idle

**HOGAN, HAROLD**  
Winston  
SILVER SADDLE MINE, Beaver  
dist, Broadwater Co, Ag, Pb, Zn

**HOKANSON BEDS**  
Box 34, Morris  
Opr: A E & F W Hokanson  
PEARL GROUP, 7 mi SW of Morris,  
Au, Ag, Pb, undergr.  
Under devel  
DEER PARK LEASE, Morris, 10 mi  
SE of Toston, undergr, Pb

**HOOPER & CURRIE**  
Suite  
Opr: A G Hooper & Dove Cur 10, Jr  
GEN MINE, Flint Cr dist, Granite  
Co, Ag, Cu

**HUGHES CREEK MINE**  
Opr: Ashbury Smith, Hamilton  
MINE, Overwich dist, Ravalli  
Co, Au, Ag  
Under devel

**HUNT MINING CO, INC**  
Box 45, Laurin  
Pres: M E Hunt  
Gen Mgr: A E Hunt  
BING, GOLD RUGGET, BULL RUN  
& CALIFORNIA GROUPS, Laurin,  
undergr, 50 fms & placer, Au, Ag,  
Pb  
Foreman: Tony Ravona  
Mech Engr: Elbert Puck  
GRAY-FLUT MILL  
Foreman: Earl Caldwell

**INTERSTATE PRODUCTS CO**  
Butte  
MINE, near Gallatin Gateway,  
Silverton  
Pres: C A Lester  
Under devel

**IRON MT LEASING CO**  
Superior  
Mgr: E O Smith, Osborn, Idaho  
IRON MT MINE, Pb, Zn, Ag  
(Leased from Fed Mng & Smelt Co,  
Idaho)  
Under devel

**JACK GROUP MNG CO**  
Dillon  
JACK GROUP MINE, Argenta dist,  
Bozorth Co, Au, Ag, Pb, Zn

**JANUARY MINING CO**  
914 Florence St, Helena  
Pres: Geo G E Neil  
JANUARY MINE, 3 mi S of Winston,  
undergr, Pb, Ag, Au  
From: 100 tons  
Mine Supt: Arthur Hagan  
(Leased to January Mines, c/o Ed  
Pohl, 105 Harvard N, Seattle, Wash)

**JARDINE MINING CO**  
Fairfax  
MINE, undergr & surface, Au, WO,  
Supt: B P Oestott  
Idle  
300-TON CYAN FLOT MILL

**JOHNSON, A L**  
Evanston  
FRANKLIN MINE, Helena dist, Lewis  
& Clark Co, Au, Pb

**JOHNSON, ROY**  
Thompson Falls  
BLUE HIRD MINE, Eagle dist,  
Sanders Co, Ag, Pb

**JUPITER MINING CO**  
Box 1010, Wallace  
Pres: H L Day  
Sec: R W Anno  
MINE, near Siltice, undergr, Pb,  
Ag, Cu  
Idle

**KEY TUNGSTEN, INC**  
Box 25, Deer Lodge  
Pres & Gen Mgr: Hurley L Pitman  
VP: Everett Lemmons  
Sec-Treas: Nora V Pitman  
KEY TUNGSTEN MINE, undergr,  
WO., Cu  
Under devel

**KLEINSCHMIDT MINE**  
Opr: Cecil Johnson, Winston  
MINE, Beaver dist, Broadwater Co,  
Ag, Cu, Pb, Zn  
Under devel

**LADY LEITH MINE**  
Opr: A Lottell & M Young  
Bixen  
MINE, Cataract dist, Jefferson Co, Ag,  
Ag, Pb, Zn  
Idle

**LANEY LEASING CO**  
505 W Aluminum St, Butte  
Mgr: Ed L they  
ALTA MINE, Colorado dist,  
Jefferson Co, Au, Ag, Cu, Pb, Zn

**LENMAN, WALTER**  
802 W Main St, Lewistown  
SIR WALTER SCOTT MINE, 70 mi  
W of Lewistown, undergr, Ag, Pb,  
Cu  
Under devel

**AMERICA MINE, 25 mi NE of  
Lewistown, undergr, Pb, Ag, Cu  
Under devel  
WAR EAGLE MINE, 20 mi E of  
Lewistown, undergr, Zn, Pb, Ag  
Under devel**

**LEXINGTON SILVER-LEAD  
MINES, INC**  
Belhart  
Pres: J A Allen  
BIG SEVEN MINE

**LIBBY GOLD CORP**  
745 Payson Bldg, Spokane, Wash  
Pres: J W Doughty  
VP: S S Schutte  
Sec-Treas: R T Woodworth  
Mgr Dir: Burt Kenoly  
LIBBY GOLD MINE, 6 mi from  
Libby, Ag, Au, Pb  
Idle

**LIBERTY MONTANA  
MINES CO**  
Jefferson Island  
Pres: W D Corrigan, Sr  
MAMMOTH MINE, Madison Co,  
Au, Ag, Cu  
Gen Mgr: A J MacGregor  
100-TON FLOT MILL  
Idle

**LITTLE ROCKIES MNG  
& DEVEL CO**  
Landsky  
Pres: Frank S Bryant  
VP: Edward P Wiegand  
Sec-Treas: Cecil Flinders  
MINE, Landsky, undergr & open  
pit, Ag, Au  
Gen Mgr: Marion Heller  
Under devel

**LIVELY MNG CO**  
Box 90, Melrose  
Gen Mgr: L B Lively  
HECLA MINE, 10 mi W of Melrose,  
undergr, Ag, Pb, Cu, Au  
Mine Foreman: John Saylor  
Under devel

**LUCKY BUD MINE**  
Opr: Al Kingley  
MINE, Sheridan dist, Madison Co,  
Ag, Cu, Pb, Zn

**LUCKY HIT MINE**  
Whitehall  
Owner: O W Wells  
MINE, Jefferson Co, Cu, Pb, Zn

**LUCKY LEAD MINES, INC**  
210 Radio Central Bldg, Missoula  
Pres & Gen Mgr: Earl T Ellis  
VP: C Gale Gleason  
Sec: Herbert C Fisher  
Met: Carl C Martin  
Gen: Earl F Elstone  
NONPAREIL MINE, 7 1/3 mi SE of  
Marville, surface, Pb, Ag  
Mine Supt: Orville Lamore  
90-TON GRAY-FLUT MILL,  
Boulder Creek  
Mill Supt: Ed Pierce

**LUITON MINING CO**  
Butte  
Mgr & insprtr: Theo J Luiton  
MINE, 4 mi N of Butte, Copper  
CHT dist, Pb  
Under devel

**LUKE, RUSSELL B**  
1021 E Front St, Butte  
JACK PINE PHOSPHATE MINE,  
9 mi NE of Elliston, undergr,  
Under devel  
LUCKE'S SILICA QUARRY, 8 mi W  
of Anaconda, open pit  
PINE SQUIREL TUNGSTEN MINE,  
7 mi NE of Avon, undergr,  
Under devel

**MACKAY, EDWARD**  
Wicks  
MACKAY MINE, Cataract dist,  
Jefferson Co, Ag, Pb

**MADISONIAN MNG & MLG CO**  
West Yellowstone  
Pres: C A Lester  
MNG & MLG CO, chrysotile  
asbestos prop at CMT Lake

**MANGER FAMILY**  
White Sulphur Springs  
Owners: Richard, Wm & Clara Manger  
CUMBERLAND GP, Castle Mt, Pb, Ag  
SNOWBANK GP, 20 mi W of White  
Sulphur Springs, Au  
Gypsum Deposit, 50 mi NW of  
White Sulphur Springs

**MARIE MINE**  
Opr: Joe Massa, Phillipsburg  
MINE, Flint Cr dist, Granite Co,  
Ag, Pb, Zn  
Idle

**MARIETTA MINES**  
Box 20, Townsend  
MARIETTA MINE, 15 mi NW of  
Townsend in Park dist, Au, Ag, Pb,  
Zn  
Gen Mgr: Al Dance  
Gen Supt: Marry Anders  
Under devel

**MARTIN MINING CO**  
Kalispell  
Pres: Hans Tutvedt  
VP: Ben Schlegel  
Sec-Treas: R T Flynn  
MINE, Flathead Co, undergr, Ag, Pb,  
Cu, Zn  
Supt: Waine Lindhorn  
50-TON MILL  
Under devel

**MASTER MINING CO**  
6223 Avondale Ave, Chicago, Ill  
Pres: O L Rhoades  
MINE, Gold Creek, Au, dragline  
dredge  
Mgr: J H McIntosh

**MAULDEN MINE**  
Dillon  
Opr: Ida B Hand  
MINE, Argenta dist, Bozorth Co,  
Pb, Ag

**MAYWOOD, MRS G A**  
Box 40, Palm City, Calif  
MONTANA-TONEPAH MINE,  
5 mi E of Maxville, placer  
Idle

**METALS MILLING CO, INC**  
Butte  
Pres: B N Linn  
Sec: Will Derig  
Treas: Roy Brennan  
RED ROCK MINE, 5 mi W of  
Butte, Pb, Zn, Ag, Au  
Prod: 40 tons  
Mine Engr: John MacGinnis  
100-TON CUSTOM FLOT MILL,  
Mine & Mill Supt: Frank Sell  
Met: Don Ober  
Elec Engr: Pete Brady  
Idle

**MIDNITE & MORNING MINE**  
Opr: D A DuBois & O C Holbrook  
Basin  
MINE, 8 mi N of Basin, undergr,  
Pb, Zn, Au, Ag  
Idle

**MILLER, JACK, MINE**  
Box 333, Drummond  
Gen Mgr: W A Noon  
MINE, Au, Ag, Pb  
Idle

**MINAH DEVELOP CO**  
Butte  
Mgr: A E Nugent  
MATSON & NORTH ALTA GROUPS,  
Jefferson Co  
Idle

**MINERAL KING MNG CO**  
1001 E Broadway, Missoula  
Pres & Gen Mgr: C F Duls  
Sec-Treas: C P Duls  
Purch Agt: R S Steward  
MINERAL KING MINE, 3 mi N of  
Saltese, undergr & surface, Au, Ag,  
Pb, Cu  
Under devel

**MINERALS ENG CO,  
MONTANA TUNGSTEN DIV**  
Box 94, Glen  
Gen Supt: W B Tobey  
Purch Agt: R W Warren  
Mine Supt: R H Roby  
Asst Mine Supt: Dove Aro  
Mine Foreman: R G Glasser  
Mine Engr: I O Garrand  
IVANHOE MINE, Brown's Lake,  
surface, WO  
Prod: 400 tons  
LOST CREEK MINE, 7 mi W of  
Glen, undergr, WO  
400-TON FLOT MILL, Glen  
Mill Supt: Earl Craig  
Asst Mill Supt: R E Evans  
Master Mach: Gus Risch  
Mill Foreman: Jim McBroom  
Assay: Dick Thompson  
(See Colo, Nev, Utah)

**MINERVA MINE**  
Whitehall  
Opr: Charles O Weber  
MINE, 7 mi NE of Whitehall,  
undergr, Pb, Ag, Au, Zn  
Under devel

**MINES PROSPECTING &  
EXPLOR CO**  
210-210 Radio Central Bldg,  
Missoula  
Pres: Earl F Elstone  
VP: R R Wallace  
Sec: Herbert C Fisher  
EXPLOR, TESTING

**MINNIE MINE**  
Opr: O A Krueger, Twin Bridges  
MINE, Norris & Norwegian dist,  
Madison Co, Au, Ag, Cu  
Idle

**MIRACLE MINES, INC**  
Basin  
Pres: W W Duroon  
VP: J Malone  
Gen Mgr: Alfred Hedval  
MERRY WIDOW, 1 mi N of Basin

**MISSOULA LINCOLN  
METALS CO**  
Box 534, Missoula  
Pres: R W Hamgren  
VP: Carl Dugstad  
Sec-Treas: George F DuVal  
MINES, near Lincoln, Au  
Idle

**MITCHELL MNG CO**  
P O Box 193, Mt Vernon, Wash  
Pres: E H Oimsted  
VP: I M Peck  
Sec: Walter Hartwick  
Treas: A C Pelland  
Purch Agt: Ralph Seideman  
MARGRET ANN MINE, P O Box 163,  
Butte, undergr, Ag, Au, Pb, Zn,  
Bis  
Mine & Mill Supt: Ralph Seideman  
Mine Engr: Maurice Turner  
Prod: 75 tons  
125-TON FLOT MILL, Walkerville  
Mill Foreman: Walter Giebel  
Assay: Hammond-Everly

**MO, HANS-**  
Rimmi  
AUSTRALIAN MINE, Amazon dist,  
Jefferson Co, Ag, Pb, Zn  
DUNKER MILL & SUNLIGHT MINES,



Rimint dist, Lewis & Clark Co.  
Au, Ag, Cu, Pb, Zn  
O H BASSETT, CLEMENETHA,  
COPPER DYKE & TUNNEL MINES,  
Rimint dist, Lewis & Clark Co.  
Au, Ag, Cu, Pb, Zn

#### MONARCH MNG CO

Box 35, Helena  
Pres & Gen Mgr: D L Casey Jones  
Sec: M E G W  
MONARCH MINE, 14 mi S of Elliston,  
undergr, Cu, Pb, Au, Ag, U<sub>3</sub>O<sub>8</sub>  
Under devel

#### MONTANA COBALT & SILVER CREST CO

Butte  
NEW SILVER CREST "A",  
Virginia City dist, Madison Co.  
Ag, Pb  
Idle

#### MONTANA COPPER KING CO, INC

Dixon  
Incorporates: J E & G D Hall &  
J W Warren

#### MONTANA MINERAL DEVEL CO

308 Snyder St, Apt 201, Glendive  
Pres: Richard Busfield  
VP: Philip Hanson  
Sec-Treas: Geo C Johnson  
Butte

#### MONTANA MNG & ENGR CO

Philipsburg  
Pres & Genl: F S Neal  
VP & Met: W L Gogenshart  
Sec: E T Irvine  
BAGDAD MINE, 29 mi NW of  
Philipsburg, undergr, Au, U  
Under devel

#### MONTANA PHOSPHATE PROD

Garrison  
Pres: H B Sheldy  
ANDERSON MINE, 11 mi NW of  
Garrison  
GRAVELEY, CHMLET & LUKE  
MINES, 9 mi NW of Avon, undergr,  
phosphate rock  
Supt: F E Burnett  
Asst Supt: A E Langston  
Foreman: C R McDonald  
Engr: C Moon

#### MONTANA RAINBOW MNG CO

Marysville  
Owner: W R Wade  
Gen Supt: John Brophy  
DRUMLUUMMON MINE, Marysville,  
undergr, Au  
Idle

#### MONTGOMERY, R F

Anticamp  
SILVER REEF MINE, Osgoodtown  
dist, Deer Lodge Co, Ag

#### MOOSEHORN MNG CO

Divide  
MINE, Vipond dist, Beaverhead  
Co, Au, Ag, Cu, Pb  
Idle

#### MORNING GLORY MINE

Op: J E Curtiss, Basia  
MINE, Cataract dist, Jefferson  
Co, Au, Ag, Cu, Pb, Zn  
Under devel

#### MOUNTAIN CLIFF MINE

Op: Fred Box, Pony  
MINE, Virginia City dist,  
Madison Co, Au, Ag, Pb, Zn  
Under devel

#### MOUNTAIN FLOWER MINE

Op: R H & H F Rogers,  
Virginia City  
MINE, Virginia City dist, Madison  
Co, Ag, Pb, Zn

#### MUS, RAYMOND

Coe  
ST JUDE MINE, New World dist,  
Park Co, Ag, Pb, Zn

#### MUS BROS

Gardiner  
HUDSON MINE, New World dist,  
Park Co, Ag, Pb

#### NANCY LEE MINES INC

P O Box 538, Kellogg  
Pres: Wendell E Brumard  
Sec-Treas: Wayne A Brumard  
NANCY LEE MINE, Superior  
Ag, Pb, Zn, Cu  
Under devel

#### NEGROS MINE

Elliston  
MINE, 6 mi S of Elliston,  
undergr, Pb, Au, Ag  
Mine Supt: John F Hopkins  
Prod: 2 tons

#### NEW ELKHORN MNG CO

Boulder  
ELKHORN QUEEN MINE, Elkhorn  
dist, Jefferson Co, Ag, Pb, Zn

#### NEW LENORE MNG CO

Box 5, Roman  
Pres: H E Olsson  
VP: A L Atkinson  
Sec: Frank E Hobson  
NEW LENORE MINE, St Regis, 13  
mi SW of St Regis, undergr,  
Mine Supt: Jack Sheldon  
Under devel

#### NEW WORLD MINE

Op: James T Rouane, Columbus  
MINE, New World dist, Park Co,  
Au, Ag, Cu, Pb, Zn  
Idle

#### NEWBERG BROS & SLOAN, INC

Butte  
EVA MAY MINE, Zn, Pb, Au, Ag  
Under devel

#### NICHOLSON, BASIL

Harrison  
RIDGEWAY MINE, Pony & South  
Boulder dist, Madison Co, Au, Pb

#### NINE MILE MINE

Op: William Lamm, Stark (Spring  
& Summer only)  
MINE, Stark, 40 mi NW of  
Missoula, undergr & surface, Au, Ag  
B-TON GRAV MILL

#### NORMAN ROGERS MNG CO

Mike Horse  
MIKE HORSE MINE, Hedden  
dist, Lewis & Clark Co, Ag, Cu,  
Pb, Zn

#### NORTH STAR GROUP "A"

Op: Ray E Nichols, Radersburg  
MINES, Cedar Blaine dist,  
Broadwater Co, Ag, Pb, Zn  
Under devel

#### NORTHWEST GOLD CORP

Whitehall  
COLORADO MINE, 4 mi S of  
Whitehall, Remova dist, Madison Co  
Under devel

#### NORWICH & PLUTUS MINES

43 Harbour Bldg, Butte  
Partners: I G Irving & R H Nelson  
NORWICH MINE, 2 mi W of Butte,  
undergr, Mn, Ag  
Gen Mgr: I G Irving  
Gen Supt: R H Nelson

#### NYGREN, RUBY

Billings  
TUSCARORA MINE, Argenta dist,  
Beaverhead Co, Ag, Pb, Zn

#### O'CONNELL, JR, ROBERT

Marysville  
MARSHA MINE, Marysville dist,  
Lewis & Clark Co, Pb, Zn

#### OCCIDENTAL MINE

Sheridan  
Op: P H Peterson  
MINE, Sheridan dist, Madison Co,  
Ag, Cu, Pb, Zn  
Idle

#### OLD CHIEF MINE

Op: Jas Patton, Philipsburg  
MINE, Flint Cr dist, Granite  
Co, Ag, Pb, Zn

#### OLIPHANT, CLARENCE

Butte  
CUMBERLAND MINE  
(Leased from Cumberland Mines,  
which see)

#### ORO MINE

Op: E C Phillips, Troy  
MINE, Ruby Cr dist, Lincoln  
Co, Ag, Cu, Pb, Zn  
Under devel

#### OSANNE MINE

Op: L James & C Albano, Jens  
MINE, Dunkleberg dist, Granite  
Co, Au, Ag, Cu, Pb, Zn  
Idle

#### PASSOVER MINE

Op: Baird & Dawson, Boulder  
MINE, Elkhorn dist, Jefferson  
Co, Ag, Cu, Pb, Zn  
Idle

#### PERHAPS MINE

Whitehall  
Op: Lester Lindquist  
MINE, Jefferson Co, Au, Ag,  
Zn, Pb  
Idle

#### PETERSON, DEAN

Silver Star  
PETERSON MINE, Silver Star dist,  
Madison Co, Ag, Pb

#### PEURA, LOUIS

124 6th Ave, Helena  
GREGORY & MINNESOTA DUMP  
MINES, Colo dist, Jefferson Co,  
Au, Ag, Cu, Pb, Zn  
Idle

#### HELENA & SILVER COIN MINES

Scratch Gravel dist, Lewis &  
Clark Co, Au, Ag, Cu, Pb, Zn  
Idle

HOPE & FAITH MINES, Montana  
City dist, Jefferson Co, Au, Ag,  
Cu, Pb, Zn

#### JULIA MINE, Scratch Gravel

dist, Lewis & Clark Co, Ag, Cu,  
Zn

#### LIVERPOOL DUMP, Clancy &

Lump Gulch dist, Jefferson Co,  
Ag, Cu, Pb, Zn  
Idle

#### PARK PEERLESS MINE, Helena

dist, Lewis & Clark Co, Au, Cu,  
Idle

#### WHITLATCH MINE, Helena dist,

Lewis & Clark Co, Au, Ag, Cu  
Idle

#### MORNING STAR MINE, New World

dist, Park Co, Au, Ag, Pb, Zn  
Idle

#### CLEVELAND MINE, Jefferson City

dist, Au  
Under devel

#### PHOSPHATE & MIN DEVEL

Maxville  
Owners: Mari, Johnson & Ingersoll  
MINE, near Maxville, Granite Co

#### PONY TUNGSTEN ENTERPR

Pony  
Pres & Gen Mgr: Emmett Clary  
VP: Lloyd E Fritzel  
Sec-Treas: Fred D Box  
STRAWBERRY GROUP, 1 1/2 mi  
W of Pony, undergr, WO<sub>3</sub>  
Mine Supt: Emmett Clary  
Under devel  
B-TON GRAV MILL  
Mill Supt: Fred D Box

#### POTRATZ, G O

Box 366, Avon  
CYCLONE MINE, 13 mi N of  
Avon, undergr, Co, Ag, Au  
Idle

#### PRINCETON MNG CO

Maxville  
MINES, Boulder & S Boulder  
dist, Granite Co, Ag, Cu, Pb, Zn  
Idle

#### RABBIT MINE

Op: Norman Rogers, Helena  
MINE, Summit Valley dist,  
Silver Bow Co, Ca

#### RADON RESEARCH CORP

Boulder  
Pres & Gen Mgr: Wade V Lewis  
VP: Theodore Hymest  
Sec-Treas: J T Lewis  
RED ROCK URANIUM MINE,  
Boulder, 2 mi W of Basia, undergr,  
U<sub>3</sub>O<sub>8</sub>

#### URANIUM MT MINE, Boulder U<sub>3</sub>O<sub>8</sub>

#### RED CHIEF MINE

Butte  
Op: Chas White  
MINE, Morris & Horwegian dist,  
Madison Co, Ag, Cu  
Idle

#### REED, JIM

Twin Bridges  
SHOEMAKER GROUP, 9 mi N of  
Twin Bridges, undergr, Au, Pb  
LEODORE & THISTLE MINES,  
Boulder dist, Madison Co, Ag,  
Cu, Pb, Zn  
Idle

#### RELYEA, GEORGE A

Box 85, Garrison  
RELYEA MINE, 11 mi N of  
Garrison, undergr, phosphate  
Mine Supt: George A Relyea  
Mine Foreman: William Hend-  
rickson  
Prod: 100 tons  
(See Idaho)

#### RENZ, HARRY

133 N Rife St, Dillon  
PINE TREE MINE, Au, Ag  
Idle

#### REVENUE MINES DEVEL CO

Butte  
Pres & Mgr: R E Emery  
VP: A H Emery  
Sec-Treas: A M Welles  
REVENUE GROUP, 9 mi SW of  
Butte, Au  
Idle

#### RISING STAR MINE

Op: F C McNulty, Butte  
MINE, Summit Valley dist,  
Silver Bow Co, Ag, Pb, Zn  
Under devel

#### RISING SUN MNG CO

Butte  
Incorporates: Al & Maria Fisher &  
Ernest Shepherd, Butte, &  
Dorothy Benson & G F Scholtz-  
ing, Billings  
MINE, SW Butte dist  
Idle

#### ROCK CREEK TUNGSTEN

Missoula  
Incorporates: J P Smith, Owen  
Olmsted, H G Anderson, R T  
Sligner, Missoula & Ed  
Schrieber, St John, Wash  
Under devel

#### ROGERS, NORMAN

Helena  
BERTHA MINE, Summit Valley  
dist, Silver Bow Co, Cu

#### ROYAL MINE

Op: E C Lucier, Drummond  
MINE, Dunkleberg dist, Granite  
Co, Ag, Pb, Zn  
Idle

#### RUSSELL, A C

Dillon  
GOLDFINCH MINE, Argenta dist,  
Beaverhead Co, Au, Ag, Pb

#### SHAVER & RENZ

Argenta  
LAST CHANCE MINE, Argenta  
dist, undergr, Au

#### SIERRA TALC & CLAY CO

3508 Randolph St, Los Angeles,  
Calif  
Pres: Dorothy Dodd  
Gen Mgr: E W Stevens  
YELLOWSTONE MINE, Ennis,  
52 mi N of W Yellowstone, undergr,  
talc

#### SILVER BULLION MINES CO

White Sulphur Springs  
MINE, Mesquite Co, Ag

#### SILVER CRESCENT MNG CO

Box 258, Helena  
Pres & Gen Mgr: William A Hall  
VP: Henry Edwards  
Sec: Laurel Roe  
CRESCENT, PEERLESS & SILVER  
CRESCENT MINES, 33 mi S of  
Helena, Au, Pb, Ag, Zn, Cu,  
undergr

#### SILVER DYKE MINE

Op: Paul Vdovec, Neihart  
MINE, Montana dist, Cascade Co,  
Ag, Cu, Pb, Zn

#### SIN NOMBRE MINES

P O Box 214, Gardiner  
Pres & Treas: Thomas J Hallin  
VP: Theodore T Mosley  
Sec: Donald Cameron, Jr  
SIN NOMBRE MINES, Crestone  
dist, Park Co, undergr, WO<sub>3</sub>,  
Au, Ag, Ag  
Gen Mgr: Donald Cameron, Jr  
Gen Supt: Theodore T Mosley  
Geol & Met: Thomas J Hallin  
Under devel

**SNOWFLAKE MINE**

Oper: Wm L Russell, Helmsville  
MINE, Big Blackfoot dist, Powell  
Co, Au, Pb, Zn  
Under devel

**SOLL, FRANK**

Helmsville  
ORCHARD MINE, Basin dist,  
Jefferson Co, Ag, Pb

**SOLUBLE PHOSPHATES, LTD**

Box 8, Maxville  
Pres: Lee H Skousil  
PHOSPHATE MINE, Maxville  
50-TON MILL

**SPALDING MINES, INC**

Poplar  
Pres: B W Anderson  
VP: Lorenz Nelson  
Sec-Treas: Thelma Anderson  
MINE, Poplar, placer  
Under devel

**STAR MINE & MILL**

Neihart  
Gen Mgr: L B Stark  
STAR & GALT MINES, N of  
Neihart, undergr, Ag, Pb, Zn  
95-TON FLOT MILL  
Under devel

**SWAGERTY & TONEY**

Townsend  
Oper: C W Swagerty & Kenneth  
Toney  
SILVER WAVE MINE, Park or  
Indian Cr dist, Broadwater Co,  
Ag, Pb

**SWANSEA MINES, INC**

Box 304, Helmsville  
Pres & Gen Mgr: C L Hewitt  
SILVER BELL MINE, 40 mi NW  
of Helmsville, undergr, Au, Ag, Cu,  
Pb  
Under devel

**SYLVAN GOLD MINES, INC**

Basia  
Dir: P V Phipps, H Phipps,  
A J Cavero, O A Bittick, H O  
Bittick  
FREEBURG GROUP, Jefferson Co,  
Au, Ag, Cu, Pb  
Under devel

**SYLVIA MINES**

(A Partnership)  
Box 325, Gilman  
Mgr & Purch Agt: O M Fleming  
SYLVIA MINE at Argenta, undergr,  
Au, Ag, Pb  
Mine Supt: R M Fleming  
1918

**TAYLOR-KNAPP CO**

Box 77, Phillipsburg  
Pres: S R Knapp  
VP & Gen Mgr: A V Taylor, Jr  
VP: A J C Kremer  
Eng: Donald S Johnson  
Ch Engr: Charles P Knobel  
MOORLIGHT GROUP, Phillipsburg,  
undergr, Au, Ag, Zn  
Mine Foreman: C H Estlund  
Skill Foreman: G Knobel  
Assay: F S Neal  
150-TON GRAV-MAG MILL

**TIGER MINE**

Oper: Croft & Montague, Monarch  
MINE, Barker dist, Judith Basin  
Co, Ag, Cu, Pb, Zn

**TRADER NORM MNG CO**

Edison  
MINE, Virginia City dist, Madison  
Co, Ag, Pb, Zn  
Idle

**TREASURE STATE MINE**

Oper: Wm Hagman, Boulder  
MINE, Anston dist, Jefferson  
Co, Ag, Pb, Zn

**TRI-STATE MINERALS CO**

(SUBSID OF SOUTHERN  
CALIF MINERALS CO)  
Dillon  
TALC MINES, Dillon  
Gen Supt: Ernest Nygren  
(See Tri-State Minerals, Utah, So  
Calif Minerals, Calif)

**TUNGSTEN MINERALS, INC**

Dillon  
Incorpor: Albin Pierce, R P  
Fleming & Al & Catherine Groshen

**UNITED MINES CO**

P O Box 957, Butte

Pres: I R Dickson  
VP: H Z Walker  
Sec-Treas: W C Walker  
Purch Agt: C Owen Smithers  
Engr: F W Maloy  
TOURNALINE MINE, Elkhorn Cr,  
near Boulder, undergr & surface  
Gen Mgr: E A West  
Geol: Roy P Merrill  
Under devel  
CLAIMS, Madison Co & Silver Bow  
Co

**U S GOLD CORP**  
455 Cedar St, Seattle, Wash  
MINE, 12 mi NE of Twin Bridges,  
Madison Co  
Under devel  
B & H MINE, Tidal Wave dist,  
Madison Co, Au, Ag, Cu  
Idle

**U S GYPSUM CO**

Neath  
UNDERGROUND GYPSUM MINE  
Prod: 350 tons  
(See Calif, Colo, Ill, Iowa, Mass,  
Mich, Mont, Nev, New Mex, Ohio,  
Tex, Utah, Va, Wash)

**U S MINING CORP**

Neihart  
BROADWATER & MOULTON GROUP,  
Moulton dist, Cascade Co, Ag, Cu,  
Pb, Zn  
Idle

**U S STEEL CO**

Darby  
CRYSTAL MT MINE, Co, Pb  
(See Ala, Mich, Minn, N Y, Tenn,  
Utah)

**VERMICULITE CO OF AMERICA**

405 Thorpe Bldg, Minneapolis,  
Minn  
Pres: Stanley Gray  
MINE near Hamilton, vermiculite  
Idle

**VICTOR CHEMICAL WORKS**

Supt: L O Streithamer  
Prod Supt: C Hendrickson  
Supt, Mng Oper: Henry Johnson  
Proj Engr: Mng Oper: C O Derich  
MINE, Maiden Rock, undergr,  
phosphate rock  
ELEMENTAL PHOSPHORUS PL,  
Silver Bow, Electric Furnacing

**VICTORIA MINES, INC**

Box 347, Sheridan  
Pres: John T Fouts  
AMERICAN PIT MINE, 2 mi W  
of Silver Star, W, Zn, Au, Ag  
TOLLEDO-HUCKEY GROUP,  
Sheridan dist, Madison Co, Ag,  
Cu, Pb, Zn  
150-TON FLOT MILL  
Idle

**WALL, JOHN**

Basia  
AURORA MINE, Contract dist,  
Jefferson Co, Ag, Pb

**WARRINGTON MINE**

Oper: Grant W Borggren  
Hamilton  
MINE, Overrich dist, Ravalli  
Co, Au

**WEBER, CHARLES**

Whitehall  
SOUTH VIEW MINE, Whitehall  
dist, Jefferson Co, Ag, Ag,  
Pb, Zn

**WESTERN MONTANA EXPLOR & DEVEL CO, INC**

411 Western Bank Bldg, Missoula  
Pres & Gen Mgr: Roy W Key  
VP: O J Durand  
Sec-Treas: Francis A Hamack  
Cone Engr: Frank Eichelberger  
WASA-SHAMROCK MINE, 12 mi SE  
of Hall, undergr, surface, Zn, Cu,  
Pb, Co, In  
Gen Supt & Mine Engr: F A Hancock  
Idle

**WHITE PINE LEAD CO**

Helmsville  
WHITE PINE MINE, Warm Springs  
dist, Jefferson Co, Ag, Pb, Zn  
Under devel

**WILBORN, R A**

Armadillo  
TEMPLETON MINE, Chinatown dist,  
Beaverhead Co, Ag, Pb, Zn

**WILLIAMS PHOSPHATE CORP**

Canyon Camp  
Pres: Griff Williams  
MINE, 30 mi S of Alder, Madison  
Co, phosphate  
Under devel

**WYOMING-MONTANA MNG & ENGR CO**

Powell, Wyoming  
Pres: Sam Egbert  
VP: William Mauch  
Sec: Marie Barnhart  
BILLY BENNETT MINE, Sheridan,  
S mi N of Sheridan, undergr, Pb,  
Ag, Au  
Mine Foreman: Jack Oldham  
LATEST OUT MINE, S mi E of  
Sheridan, undergr, Au, Ag, Pb,  
Cu  
Under devel

**YOGO SAPPHIRE MNG CORP**

Lewistown  
PLACER, 50 mi SW of Lewistown  
Under devel

**ZONOLITE CO**

Libby  
VP, Chg Prod: J B Myers  
Purch Agt: B J Dorrington  
Mgr: R A Stetch  
MINE, near Libby, surface,  
vermiculite concentrate  
1,100-TON MILL  
(See Ill & S C)

**NEBRASKA****AMER SMLTG & REF CO**

OMAHA SMLTG & REFINERY  
Omaha  
Mgr: Ray C Shaw  
Gen Supt: J C Reinhardt  
(See Ill, Okla, Ariz, Colo, Calif,  
Ida, Mont, New Mex, N Y, Utah,  
Wash)

**SIERRA TALC & CLAY CO**

Box 200, S Pasadena, Calif  
MILL, Grand Island  
(See Calif, Nev)

**NEVADA****ADAVEN MNG CORP, LESSEE**

Box 278, Fernalley  
WHITE BLOWOUT MINE, Washoe Co  
Under devel

**ADOOR, GEORGE T & VON PETERSON MNG CO**

Box 111, Ruth  
ELK LODGE, Robinson dist, Zn, Pb,  
Au, Ag, Cu  
Idle

**APPRACHINO, ERNEST**

Box 101, Eureka  
REX MINE, Diamond dist, 10 mi NE  
of Eureka, Pb, Ag  
Idle

**JEFFERSON & STAR OF THE WEST MINES**

on Ruby Hill, 2 mi W of  
Eureka, Shale & Quartzite  
Idle

**NEW RUBY BELL, 4 mi S of Eureka, Ag, Pb, Au**

IRISH AMBERLOD & BROMIDE  
MINES, 10 mi S of Eureka, under-  
gr, Au, Pb, Zn

**STIBNITE MINE, 7 mi S of Eureka, undergr, Sh, Ag, Pb**

JEWEL MINE, 3 mi S of Eureka,  
Au, Ag  
Under devel

**GARDEN PASS MINE, Eureka**

Under devel  
URANIUM QUEEN, Eureka  
Under devel

**AMERICAN ORE CO**

Box 579, Lovelock  
AMERICAN IRON ORE MINE,  
Pershing Co

**AMERICAN PERLITE CO**

Box 200, Potosi, Calif  
Gen Mgr: C U Rechsteiner  
PERLITE QUEEN MINE, 12 mi

SW of Searchlight, surface,  
perlite

Prod: 185 tons  
150-TON GRAV MILL

**ANACONDA COPPER MNG CO**

VERINGTON MINES  
Box 1000, Wood Heights  
Gen Mgr: A E Millar  
Mine Supt: H R Burch  
Pl Supt: A J Gould  
Gen Mine Foreman: C J Houch  
Gen Pl Supt: F M Moninger  
Ch Clerk: H L Chesarek  
Pers Supt: K W Humphreys  
Storekeeper: R K Owen  
Master Mech: J J Hyland  
Garage Foreman: W M Cross  
Elec Foreman: M H Bussell  
VERINGTON MINE, 61 mi SE of  
Reno, surface, Cu  
Prod: 11,000 tons  
11,000-TON LEACH & PRECIP PL  
(See Calif, Mont, New Mex, Ida,  
N Y, Utah)

**ARGENTA CONS MNG CO**

Box 7, Goodsprings  
ARGENTA MINE, 3 mi S of  
Goodsprings, undergr & surface,  
Zn, Pb  
10-TON FLOT-CONCEN MILL  
Idle  
(See Calif)

**ARGENTUM MNG CO OF NEV**

Box 134, Mina  
Pres: E S Gates  
VP & Treas: C E Earl  
Sec: J A Crowther  
SOUTHERN BELLE & MT DIABLO  
MINES, Candelaria, Ag, Au,  
Pb, Zn  
Gen Mgr & Gen Supt: C E Earl  
Asst Gen Mgr & Met: E S Gates, Jr  
Comm Met: A Kastari  
300-TON FLOT-GRAV MILL,  
Columbus Marsh No Rim  
Mill Supt: C E Earl  
Assay: Wm Hardy

**ARISTA GOLD MNG CO**

Basia  
Mgr: W H Callicott  
ARISTA MINE, 10 mi S of Bently,  
undergr, Au, WO<sub>2</sub>  
Under devel

**ATLANTA GOLD & URANIUM CO**

Box 440, Grand Junction, Colo  
ATLANTA MINE, Lincoln Co,  
UO<sub>2</sub>  
Under devel

**ATLAS GOLD MNG CO**

930 Oliver St, S Pasadena, Calif  
c/o Nevada Corp, Service, Reno  
Pres & Gen Mgr: R H Carpenter  
VP: E B Carpenter  
Sec: Frank E Hland  
EDGEMONT MINE, Edgemont via  
Tucacora, 85 mi N of Elko,  
undergr, Au, Pb, Ag  
Under devel  
40-TON FLOT-GRAV MILL

**AUSTIN, JESSE**

Jungo  
NORTH STAR (JUNGO STAR) LORE,  
Antelope dist, Au, Ag, Pb, Zn, Cu  
Idle

**BALTIMORE CAMAS MINES INC**

600 Eastman Bldg, Boise, Idaho  
Pres: G P Williams  
VP: Fred Jaquith  
Sec-Treas: George W Dana  
100-TON GRAV-FLOT MILL, Ely  
(Leased to Mineral Engr Co of  
Grand Junction, Colo)

**BANNER HILL URANIUM CO, INC**

Bank Bldg, Box 1086, Tonopah  
Pres: William Fischer  
VP: Raymond C Harvey  
Sec: Patricia Kane  
ESPERITO GROUP, STONE CABIN  
GROUP, MONTICELLO GROUP, near  
Marietta, under gr, UO<sub>2</sub>, Co, Ag,  
Au  
Mine Supt: Raymond C Harvey  
Under devel  
(See Calif)

**BARIUM PRODUCTS, LTD**

(SUBSID OF FOOD MACH &  
CHEM CORP)  
Battle Mountain  
Gen Mgr: G M Stark

MT SPRINGS MINE, 22 mi S of  
Battle Mt, surface, barite  
Mine Supt: James Jery  
(See Barium Products, Calif);  
Intermountain Chem, Wyo; Food  
Mach & Chem, N Y

BARNDT, V J  
Tybo via Tonopah  
RESCUE LODE, Tybo dist, Pb, Au,  
Ag, Cu, Zn  
Under devel

BARYTE NO 1 MINE  
Box 187, Battle Mountain  
MINE, 16 mi from Battle Mt, surface,  
barite  
Mgr: Andrew J Shelton

BASIC REFRACTORIES, INC-  
Gabbs  
Works Mgr: H P Willard  
Mine Supt: A M Dixon  
Mill Supt: F W Mensel  
Works Engr: D L Wooster  
Purch Agt: M L McConnell  
GABBS MINE, surface, magnesite,  
brucite  
Prod: 500 tons  
(See Ohio)

BATTLE CREEK TUNGSTEN  
Ruby Valley  
TUNGSTEN MINE, 57 mi SW of  
Wells, surface, scheelite  
Under devel

BAY STATE MINES  
Kimberly  
Lessee: A R Laird & J T Stinnett  
MINE, 20 mi E of Eureka, undergr,  
scheelite  
Prod: 20 tons

BELMONT MINE & MILL CO  
c/o D A Jennings, Box 442, Ely  
BELMONT MINE, 54 mi SE of  
Ely, undergr, Pb, Ag  
Under devel

BEOVAWE BARIUM PROD  
ASSN  
Beowawe  
Pres: Carl Hannaman  
VP: Joe Thomas  
Sec: C P Stone  
Gen Mgr: Dick Edgar  
Asst Gen Mgr: Gene Harris  
Met: Lee Lakin  
Mech Engr: L L Mauldin  
Purch Agt: C P Stone  
FIVE PITS, 23 mi S of Beowawe,  
surface, barite  
(Leased to Magnet Cove Barium Co)

BIEROTH, H C  
Mountain City  
RIO TINTO DUMP, Mt City (Cope)  
dist, Cu, Ag

BIG CASINO MINE  
Searchlight  
MINE, 3 mi E of Searchlight, lode,  
Pb, Ag, Au, Zn  
Idle

BIG CREEK MNG & MLG CO  
Box 582, Austin  
Pres: Ernie W Thompson  
Gen Mgr: Theo E Stevens  
DRY CANYON & BIG CREEK MINES  
18 mi SE of Austin, undergr, surface,  
Sb  
Mine Supt: H A Clements  
Prod: 20 tons  
25-TON FLOT MILL, Austin

BIG THREE MNG CO  
c/o R W DeLaMare & K D Thomas  
Silver City  
SPRING VALLEY LODE, Silver City  
dist, Au, Ag  
Idle

BLACK DIAMOND MINE  
Owner: Charleston Hill Nat'l Mines  
Contractor: Harry Rynor  
MINE, Humboldt Co, Ma

BLACK METAL MNG CO  
Pioche  
BLACK METAL LODE, Jack Rabbit  
dist, Pb, Zn, Ag, Cu, Au, Mn

BLACK PRINCE MNG CO  
Pioche  
Pres: Mrs C B Wheeler  
Sec-Treas: E J Deck  
MINE, Pioche, Mn, Au, Ag  
(Leased to Comb Metals Refus)

BLACK ROCK MANGANESE  
CO

Elko  
MINE, 31 mi SE of Battle Mt,  
undergr & surface, Mn  
Mine Foreman: Ervin Walters  
Prod: 100 tons

BLACK ROCK SOIL AID CO  
Sulphur  
MINE, Sulphur, 50 mi W of  
Winnemucca  
500-TON MILL, crushing &  
screening

BLUE DIAMOND CORP  
1680 S Alameda St, Los Angeles,  
Calif  
Pres: N J Redmond  
VP: W G Bradley  
Ch Chem: John Herbert  
Pl Engr: R S White  
Safety Engr: C W Thompson  
Purch Agt: B M Martz  
BLUE DIAMOND MINE, Blue  
Diamond, 25 mi SW of Las Vegas,  
undergr, gypsum  
Mine Supt: M C Brooks  
Asst Mine Supt: Joe Cain  
Prod: 500 tons  
550-TON MILL & PLANT  
Mill Supt: J P Dempsey  
Wks Mgr: H L Waldhausen, Jr

BLUE JACKET MNG CO  
Box 2616, Boise, Idaho  
Pres: Leon K Carson  
Sec: Jack Murdoch  
MINE, 50 mi N of Elko, Nev  
Under devel

BRADLEY MNG CO  
1022 Crocker Bldg, San Francisco  
4, Calif  
Pres: Worthen Bradley  
VP: John D Bradley  
Sec: E A Griffen  
GOLD BANKS MINE, Pershing Co,  
surface, Hg  
Cons Engr: T C Haggard  
Idle  
(See Calif, Idaho)

BRISTOL SILVER MINES CO  
28 Felt Bldg, Salt Lake City,  
Utah  
Pres: G W Snyder  
VP: E H Snyder  
Sec-Treas: C M Christensen  
Purch Agt: E O Beck  
BRISTOL MINE, Pioche, undergr,  
Pb, Cu, Zn, Ag, Ma, Au  
Gen Mgr: J H Bushler  
Mine Supt: Hoyt Adair

BRUHI MNG CO  
Silver Peak  
Gen Mgr: W Church Holmes  
Office Mgr: F J Rueggesser  
MOHAWK MINE, R-d Mt mng dist,  
Esmeralda Co, undergr, Ag  
MILL, Silver Peak  
(See Brundage, Ivory)

BRUNDAGE, AVERY  
(aka BRUHM MNG CO)  
Silver Peak  
(See Bruhi Mng Co)

BULLOCK, FRANK  
34 S Grant St, Midvale  
JACKSON LODE, Tacoma dist,  
Pb, Ag, Cu, Au

BURCH, L P & L D  
LASHBY  
Eastgate via Fallon  
GOLD LEDGE GROUP, Eastgate  
dist, Au, Ag  
Owner: Frank Schweiss Estate

C & C TUNGSTEN MNG CO  
245 University Terrace, Reno  
Pres & Mgr: Jay J Carpenter  
VP: J P Hart  
Sec: Elizabeth C White  
LINKA MINE, 20 mi E of Austin,  
undergr, WO  
(Under devel by Cons Uranium  
Mines, Inc)

CABARNE, EMILE &  
JIMMIE MOORE  
Box 37, Sparks  
RABE LODE, Au, Ag  
CABIN #2 LODE, Au, Ag  
Idle  
HUTCHISON LODE, Au, Ag,  
Olinghouse dist  
Idle

CALDER, DR WALLACE  
Box 319, Lovelock  
WADLEY MINE, 15 mi SE of

Mill City, placer & undergr,  
dragline-dredge, Au, Ag

CAL-ALTA OIL & MNG CO,  
INC  
Lovelock

Pres & Gen Mgr: Wm N Maharriff  
VP: J Van Dusenall  
Asst Gen Mgr: John Papave  
Sec: Joe Cook  
Gen Supt: Earl L Tucker  
GOLDEN HORSESHOE MINE, 30 mi  
N of Lovelock, undergr, Au, Ag  
30-TON GRAY MILL

CASTLE MT MNG CO  
c/o J H Allemen  
Box 1229, Salt Lake City, Utah  
Pres: R H Merrill  
VP: B F Robbins  
Sec-Treas: J H Allemen  
CASTLE MT MINE, Lander Co,  
undergr, Pb, Ag, Zn, Au, Cu  
Idle

CAVE TUNNEL LEASE  
c/o A R Hider, Box 180,  
Battle Mountain  
IRON CANYON LODE, Battle Mt  
dist, Pb, Zn, Ag, Cu, Au  
Idle

CEDAR CHEST MINE  
Mina  
Owners: G A Peterson &  
John Dewar, Box 230, Mina  
Lessee: Kenneth Dunham, Mina  
MINE, 22 mi E of Mina, undergr,  
W  
Prod: 5 tons

CENTRAL COMSTOCK MINES  
CORP  
412 Gazette Bldg, Reno  
Pres: H B Chessher, Jr  
VP & Met: H L Haxen  
Sec: J E Chessher  
Engr: H B Chessher, Jr  
CONS CHOLLAR, POTOMI, HALE,  
NORCROSS MINES, Virginia City, 1/3  
mi S & SE of Virginia City, undergr  
& surface, Au, Ag  
Mine Supt: H B Chessher, Jr  
Idle  
200-TON CYAN MILL, Virginia City  
Mill Supt: H L Haxen  
Assay: Archie McFarland

CHANCE MINE  
Cherry Creek  
MINE, undergr, WO  
Idle  
(Leased to John Hannay)

CHARLESTON HILL NAT'L  
MINES CO  
239 E 3rd, Winnemucca  
Pres: Mrs Mary Clough  
VP: C G Brailley  
Sec-Treas: L R Grants  
BLACK DIABLO MINE, Box 178,  
Golconda, 21 mi S of Golconda,  
undergr, MoS<sub>2</sub>

CHEMICAL & PIGMENT CO  
760 50th Ave, Oakland, Calif  
Pres: G C Cooper  
VP: S L Abbot, Jr  
Gen Mgr: E Harris  
JUMBO MINE, Tonopah, surface,  
barite

CHERRY CREEK TUNGSTEN  
MNG  
Box 2, Cherry Creek  
Pres & Mgr: Kenneth Cleghorn  
Sec-Treas: Willard Cleghorn  
MINE, Cherry Creek, WO<sub>3</sub>

CHICK RED CO  
Fernley  
CHICK RED MINE, 22 mi E of  
Fernley, surface, stibnite  
Supt: Lowell Smith

CHIMNEY MINES  
Box 516, Lovelock  
Owner: Elmo G Burgess  
CHIMNEY MINE, 35 mi NW of  
Lovelock, undergr  
5-TON CYAN MILL

CLEVE CR MINES, INC  
215 Felt Bldg, Salt Lake City,  
Utah  
Pres: L K Requa  
VP: W J Franklin  
Sec: Frances B Requa  
BUNCHER TUNGSTEN MINE, 17  
mi N of Major's Station, White  
Pine Co, undergr, WO<sub>3</sub>, Au, Ag  
Idle

CLIFFORD, JOSEPH & SONS  
Box 548, Tonopah  
HORSESHOE LODE, Oak Springs  
dist, Au, Ag  
TERRY-COUGAR (CLIFFORD)  
LODE, Clifford dist, Ag, Au  
Idle

COLUMBIA MINE  
Box 1288, Ely  
Gen Mgr: Sam M Robinson  
MINES, 1 mi E of Ruth, undergr,  
Mn, Zn, Pb, Cu, Au, Ag  
Prod: 10 tons  
GRAY MILL, under constr

COMB GROUP LODE MINES  
Goodsprings  
Opr: O F & Milton T Schwartz  
COMBINATION GROUP, Yellow  
Pine dist, lode, Pb, Zn, Ag, Au  
Idle

COMBINED METALS  
REDUCTION CO, NEVADA  
OPERATIONS  
Pioche

Mgr: Paul Gemmill  
Gen Mine Supt: R G Lee  
Gen Mill Supt: W G Fidler  
Office Mgr: F H Anderson  
CASELTON MINE, 3 mi W of Pioche,  
undergr, Zn, Pb, Ag, Mn  
Foreman: John J Russell  
Engr: O E Schrader, Jr  
Prod: 1,000 tons  
COMET MINE, 20 mi W of  
Pioche, undergr, Zn, Pb, Ag, WO<sub>3</sub>  
MINERVA MINE, 75 mi N of Pioche,  
undergr, WO<sub>3</sub>  
700-TON CASELTON MILL, FLOT-  
MINE, Zn, Pb, Ag, Mn  
Foreman: R H Werber  
Chief Chemist: Lyle R Stever  
400-TON PANACALITE MILL,  
Crushing & grinding, crude perlite  
(See Utah)

COMMODORE TUNGSTEN  
MINER  
Mgr: Gordon Smith, Gabbs  
NEW YEAR MINE, Ryan Co, WO<sub>3</sub>  
(Oper Inca Devel Co)

CONQUEST MINE  
c/o Gale Pae, Austin  
MINE, 20 mi E of Austin, undergr,  
surface, WO<sub>3</sub>  
Foreman: W E Haxen  
Prod: 5 tons

CONS COPPERMINES CORP  
Kimberly  
VP & Gen Mgr: Arthur F O'Connor  
Supt of Opr: J Frank Sharp  
Geol: J McLaren Forbes  
Chief Clerk: John Eaby  
Chief Engr: Harold W Bishop  
Master Mech: Thomas Gilmour  
Chief Elec: William Shields  
Chief Chem: Lewis Mathis  
MORRIS PIT, BROOKS, PIT,  
INTERESTS IN COPPER PLAT  
PIT & VETERAN PIT, Kimberly,  
surface, Cu, Au, Ag, Mo  
Prod: 3,000 tons  
Work done under contract by  
Isbell Const Co & Kennecott Copper  
Corp  
(See New York)

CONS EUREKA MNG CO  
Eureka  
Gen Mgr: Sherman B Hinkley  
Asst Gen Mgr: Roger M Caywood  
DIAMOND MINE, 3 mi from Eureka  
undergr, Pb, Ag, Au  
Mine Supt: Roger M Caywood  
(See Utah)

CONSOL URANIUM MINES,  
INC  
Austin  
LINKA TUNGSTEN MINE, Lander  
Co, WO<sub>3</sub>  
280-TON FLOT MILL  
Mill Supt: Matt Martinson  
(See Colo, Utah)

CONSTANT, BENJAMIN  
Box 107, Reno  
GALENA HILL MINE, 15 mi S of  
Reno, undergr, Pb, Ag, Au  
Prod: 20 tons  
30-TON GRAY MILL, 45 mi N  
of Lovelock

CONSTANT MINERALS SEP  
PROCESS, INC  
Box 107, Reno  
Pres & Gen Mgr: Maurice Constant  
VP: H C Howell  
Sec-Treas: Mary Smith



**MONKOTA MINE**, 8 mi S of Sulphur, surface, So, WO<sub>3</sub>, Hg, Au, Ga  
Supt: B I Constant  
**GRAV MILL**, 150 yds per hour  
**GALENA HILL**, lode, Pb, Ag, Cu, Mn

# COOLEY MINING CO

Box 272, Austin  
Pres: A J Cooley  
**THOMAS W MINE**, New Pines dist, lode, Au, Ag

# COPPER BUTTE MNG CO, INC

Box 6, Wabuska  
**BUCKSKIN (COPPER BUTTE) LODGE**, Buckskin dist, Au, Ag, Cu  
Under devel

# COPPER CANYON MNG CO

Battle Mountain  
Ch of Bd: L E Whitcher  
Pres: John E Maloy  
VP & Gen Mgr: H H Raring  
Soc: E L Sherman  
**COPPER CANYON MINE**, 18 mi SW of Battle Mt, undergr, Cu, Au, Ag, Pb, Zn  
Mine Engr: G T Brown  
Idle  
**150-TON FLOT MILL**  
Assay: Eric Soudersmann  
Idle

# COPPER KING CO

Battle Mtn  
**COPPER KING MINE**, Maggie Cr dist, lode, Cu, Ag, Au  
Idle

# COPPER VALLEY MINE

Agt: W A DeWitt, 937 2nd Ave, Salt Lake City, Utah  
**MINE**, 34 mi NE of Ely, undergr, Cu

# CORDERO MINING CO

131 University Ave, Palo Alto, Calif  
**CORDERO MINE**, McDermitt, 13 mi SW of McDermitt, undergr, Hg  
Gen Supt: Vernon F Haas  
Mine Foreman: Kenneth Reed  
Prod: 80 tons  
**FURNACE #1 mine**  
(See Calif, Oregon)

# CORDES, SILAS

924 Main St, Boise, Idaho  
**BLUE JACKET MINE**, Elgin dist, lode, Ag, Au, Cu, Pb, Zn  
Under devel

# CORNELIUS, LEE

Mina  
Owners: Leland, Casey & Sullivan  
**JASPER MINE**, Mineral Co, Ag, Cu  
Idle

# COULTER, W S

Battle Mtn  
**COPPER QUEEN MINE**, Lander Co, Au, Cu  
**DEAN MINE**, Lander Co, Ag, Pb

# CRAFTS & PETERSON

Hickney, Utah  
**LEAD KING MINE**, White Pine Co, Ag, Pb, Zn  
Under devel

# CRESCENT LEAD MNG CO

Box 187, Searchlight  
**MINE**, Co, Pb, Ag, Au  
Under devel

# CROWELL, J IRVING JR

Box 66, Beatty  
**MINE**, 5 mi E of Beatty, undergr, Cu, Ag

# CUCUMUNDA SCHEELITE, INC

Dyer  
Pres: J S Wisdom  
VP & Gen Mgr: D J Wicher  
Sec-Treas: Helen Wisdom  
Met: Fred Klaus  
**SILVER SUMMIT GP**, Dyer, Au, WO<sub>3</sub>  
Mine Supt: Lloyd Roy  
**FLOT-GRAB-CYAN MILL**, Pol-metal dist  
(See Grandview Mng Co)

# CURIEUX & BATEMAN

Box 662, Tonopah  
Owners: Louis & Elmer Bateman, Jennie A Curieux  
**THE CATLIN MINE**, Rawlins Range,

30 mi SE of Tonopah, undergr, 1a, Ag  
Idle

# DAKIN, FRED B

2811 Wilshire Dr, Burlingame, Calif  
**CERVANTITE MINE**, 23 mi E of Lovelock, undergr, 3b  
Idle

# DATTON DREDGING CO

Dayton  
**PLACER**, at Dayton townsite, Au, Ag  
Supt & Lococo: O A Herbert

# DE LA MARE, RODNEY W & G W

Silver City  
**ENENGADE MINE**, Washoe Co, Au, Ag  
Idle

# TUNGSTEN MINE

**SILVER HILL**, Comstock dist, lode, 1a, Ag  
Idle

# DE LONGCHAMPS, F J

Box 2244, Reno  
Owner: N Nensal  
**TALAPOOSA MINE**, 15 mi S of Fernley, Au, Ag  
Idle

# DESERT MILLING CO

Box 9, Searchlight  
Pres: W W Hartman  
VP: W P Bell, Jr  
Gen Mgr: C H Chandler  
Purch Agt: Frank Carter  
**QUARTETTE & DUPLEX MINES**, 2 mi W of Searchlight, tailings & ore dump, Au, Ag  
**100-TON CYAN MILL**, Searchlight  
Mine & Mill Foreman: H D Chandler  
Idle

# DIAMOND GOLD MNG CO

Jean  
Pres: P A Simon

# DOUBLE CHECK PROD CO

Ginserton  
Pres: Geo S Anderson  
Gen Mgr: Geo F Elder  
Sec: Louis Petralli  
**DOUBLE CHECK MINE**, 80 mi N of Reno, surface, Cu  
Prod: 26 tons  
**36-TON MILL**

# DURBIN, ROY

Phelan  
**GOLD TRAIL EXT**, Eastgate dist, lode, Pb, Ag, Cu  
Idle  
**CHALK MT MINE**, Fairview dist, lode, Ag, Pb, Au  
Idle

# DUTCH FLAT MINES INC

Winnemucca  
Pres & Gen Mgr: T A Cowan  
VP: J B Harmon  
**MINES**, 23 mi N of Winnemucca, undergr & placer, Au, Hg, WO<sub>3</sub>

# EAGLE PITCHER CO,

**INSUL DIV**  
Box 1888, Reno  
Gen Mgr: John W Kenney, Jr  
Asst Gen Mgr: Milton S Steinheimer  
**CELATON MINE**, Storey Co, silicomanganese, earth  
Mine Supt: H C Smith  
**MILL**, air classification  
Mill Supt: Frank J Dodick  
(See Ariz, Colo, Ill, Kans, Ohio, Utah, Wash, Wisc)

# EAGLE TUNGSTEN MINE

Luning  
Owner: Harold W Pilkington  
**MINE**, 14 mi NE of Luning, undergr, WO<sub>3</sub>  
Mine Supt: M F Porteous

# EAST STANDARD MNG CO

c/o Ernest Woolley  
Hotel Utah, Salt Lake City, Utah  
**MINE**, 5 mi SW of Ely, white Pine Co, Pb, Ag  
Idle

# EL CAPITAN TUNGSTEN CO

Orinda  
Mgt: Gordon Smith  
**EL CAPITAN MINE**, Nye County  
**EL CAPITAN MILL**

# ELDORADO MNG CO

1st Nat'l Bank Bldg, Denver 2, Colo  
Pres: Boris Fregot  
VP: Alexander Fregot  
**WALL STREET MINE**, Nelson, undergr, Au, Ag  
Gen Mgr: O C Ridland  
**55-TON MILL**

# ELY GOLD MINING CO

Box 684, Ely  
Pres: W G Goodman  
Sec & Mgr: W J Walker  
**JENNY A MINE**, White Pine Co, Au, Ag  
Idle

# ELY VALLEY MINES, INC

Flatche  
Pres & Gen Mgr: John Janney  
VP: R K Baker  
Treas: S D Hickman  
**ELY VALLEY MINE**, Zn, Pb, Cu, Au, Ag, Mn  
Under devel  
**30-TON FLOT MILL**

# ERRINGTON-THIEL MNG CO

Ruby Valley  
Pres: Mrs Alma T Errington, Oscar W Thiel  
**ERRINGTON-THIEL, BIG MICA MINES**, Ruby Valley, 69 mi SW of Wells, undergr & surface, ruby mica, beryl, rare minerals  
**HOLIDAY COPPER MINE**, 90 mi S of Wells, undergr & surface, Cu, Zn, rare minerals

# ERB, H M

Fallon  
**PYRAMID MINE**, Holy Cross dist, lode, Ag, Cu, Pb

# EUREKA CORPORATION, LTD

Eureka  
Pres: Thayer Lindsley  
VP & Gen Mgr: George W Mitchell  
Sec-Treas: M R Jennings  
Purch Agt: Willis A DePauli  
**RICHMOND-EUREKA MINE**, 3 mi W of Eureka, undergr, Zn, Pb, Au, Ag  
Mine Supt: J K Brosco  
Mine Foreman: E A Melka  
Mine Eng: Walter Parent  
Under devel

# FARNSWORTH, FRED

Box 1173, Ely  
**TIPPLE MINE**, Robinson dist, lode, Au, Ag

# FLETCHER MNG & MLO CORP

Box U, Manhattan  
Pres: R W Fletcher  
**FLETCHER MINE**, Au  
Idle

# GABBS EXPLORATION CO

Box 4, Gabbs  
Pres & Gen Mgr: Leo D Dougan  
VP: Helen M Dougan  
Asst Gen Mgr: D W VanVoorhis, Jr  
Office Mgr: W M Dougan  
**VICTORY TUNGSTEN MINE**, 8 mi N of Gabbs, undergr, scheelite  
Mine Foreman: James Colett  
Prod: 100 tons  
**100-TON GRAV-FLOT MILL**

# GARDNER MINES

Box 413, Ely  
Gen Mgr: C A Gardner  
**MINERAL FARM & MERRIMAN OPS**, 20 mi SE of Ely, undergr, Au, Ag, Pb  
Prod: 5 tons

# GETCHELL MINE, INC

Box 2320, Reno  
Pres: George Wingfield  
VP & Gen Mgr: N H Getchell  
Sec: T L Wilcox  
Gen Supt: Royce A Hardy  
Consul Engr: Roy A Hardy  
Assayer: Ray Holman  
**GETCHELL MINE**, Red House, 45 mi NE of Winnemucca, undergr & surface, scheelite  
Mine Supt: Wm J Newman  
Asst Mine Supt: Elmer Snell  
Prod: 600-800 tons  
**1,500-TON FLOT MILL**  
Mill Supt: Keith Kume  
Asst Mill Supt: David Kinsel

# GILLIAM, DALE R

Box 127, Montello

**LOST HOPE MINE**, Montello, undergr, Pb, Zn  
Under devel

# GIRoux, L D & R J

Box 105, Mina  
Supt: Matt Obert  
**SAN MIGUEL MINES, MARIETTA MINES**, 25 mi W of Mina, undergr, Au, Ag  
Idle

# GODWIN, TOM & BERT

Box 261, Lovelock  
**BLUE SKY MINE**, LIMERICK MINE, Pershing Co, Au, Ag

# GOLD CORP OF AMERICA

c/o P J Burfening, Box 815, Reno  
**HUNT GROUP** (eight Jumbo dist, lode, 1a, Ag  
Idle

# GOLD METALS CONS. MINES

Box 261, Tonopah  
**MINE**, Nye Co, Au, Ag  
Idle

# GOLD RANGE COPPER MINE

Box 170, Mina  
**MINE**, 9 mi SW of Mina, surface, Cu, Au, Ag  
Idle  
(Lensed to Milton R Sutton)

# GOLD ZONE MINING CORP

200 Davis St, San Francisco, Calif  
Pres: Russ Hammer  
VP: R M Glessner  
Sec & Gen Mgr: A S Simrak  
Geol: F I Humphrey  
**FAY MINE**, 50 mi SW of Ely, undergr, Pb, Ag, Au  
Under devel  
**RAIN CL URANIUM MINE**, 70 mi N of Winnemucca, U<sub>3</sub>O<sub>8</sub>  
Under devel

# GOLDEN CENTURY INDUS, INC

Box 591, Carlin  
**COPPER KING MINE**, 18 mi N of Carlin, undergr, Cu  
Supt: Frank Dean  
**CHARICO LAKE MINE**, Mn  
Under devel

# GOLDEN DAWN MNG & MLO CO

Searchlight  
Pres: H C Mills  
Mgr: G C Davis  
**MORNINGSTAR MINES**, Searchlight, undergr, Au, Ag, Cu, Pb  
Idle

# GOLDEN EMPIRE MNG CO

Searchlight  
Pres: J B Evans  
Purch Agt: Wendell Ramine  
**HERLAND MINE**, Nelson, undergr, Pb, Zn, Cu, Ag  
Foreman: J J Dietrich  
**25-TON FLOT MILL**, Nelson  
Idle

# GOLDEN ENSIGN MNG CO

Box 74, Min City  
**GOLDEN ENSIGN MINE**, 1 mi E of Min City, undergr, Au, Ag, Pb, Mo, WO<sub>3</sub>  
Supt: D C Despain  
Under devel

# GOLDEN IRIS MNG CO

c/o George Jenison, Box 2347, Oroville, Calif  
**GOLDEN IRIS MINE**, Cloverdale dist, undergr, Au, Ag  
**25-TON MILL**

# GOLDFIELD CONS MINES CO

Box 2520, Reno  
Pres: George Wingfield  
VP & Gen Mgr: E A Julian  
Sec: G M Spradling  
(See Calif, Wash)

# GOLDFIELD DEVEL CO

Box 487, Goldfield  
Pres: F J Friday  
VP: George McKay  
Sec-Treas: N J Barthorich  
Gen Mgr: W J Frank  
Idle

# GRAND DEPOSIT MNG CO

409 Hess Bldg, Salt Lake City, Utah  
Pres: Paul C Lyon  
VP: Walter Eldredge  
**GRAND DEPOSIT MINE**, Ely,



undergr. Pb, Zn, Cu, Ag.  
Au  
Gen Supt: Paul C. Lyon, Jr  
Under devel

#### GRANDVIEW MNG CO

Dyer  
Pres & Gen Mgr: J. S. Wisdom  
VP: D. J. Wicher  
Sec-Treas: Helen Wisdom  
GREENTOP GP, Dyer, undergr.,  
surface, WO<sub>3</sub>, Au, Pb, Mn  
Gen Supt: Bill Sutton  
Met: Frank Klaus  
Mine Foreman: Lloyd Roy  
FLOT-GRAV MILL, Palmetto dist  
Assay: Fred Klaus  
RETORT, BLAST FURN, Palmetto  
dist  
(See Cucumunda Schellite, Inc)

#### GRANO-LITE GOLD MNG CO

Box 357, Yerington  
Pres & Gen Mgr: W. E. Slater  
VP: Guy Ludwick  
Met: Harry O. Lewis  
Sec: W. E. Dial  
STANMOORE MINE, Hawthorne, 45  
mi SE of Yerington, surface, Au, Ag  
Under devel

#### GREAT LAKES CARBON CORP DICALITE DIV

Basalt via Tonopah  
PLANT #3, surface, dioximanganese  
earth  
Supt: John P. McEwen  
80-TON MILL  
(See Colo, Calif, New Mex, N Y, Ore)

#### GREY EAGLE DEVEL CO, INC

Beowawe  
Pres & Gen Mgr: F. G. Risley  
VP & Asst Mgr: Ed Kirochenman  
Met: Ed Eisenhauer  
Sec: Tony Musinich  
Foreman: P. O. Liebel  
GREY EAGLE MINE, 35 mi W of  
Beowawe, undergr., Ag, Au, Pb, Zn  
Under devel

#### HALL, A Z

Box 115, Beatty  
CROWN POINT GLOBE MINE,  
Johnnie dist, lode, Au, Ag  
Idle

#### HALL, JOB

190 S 300 W, St George, Utah  
SILVER KING MINE, 40 mi NW of  
Pioche, undergr., Pb, Ag  
Idle

#### HAMILTON CONS MINES CORP

200 Davis St, San Francisco, 11  
Calif  
Pres: R. M. Glesener  
VP: Joe Hornstein  
Gen Mgr: A. S. Simrak  
Sec: W. E. Sirbeck  
Geol: F. L. Humphrey  
ROCCO-HOMESTAKE MINE, 50 mi  
SW of Ely, undergr., Pb, Ag, Zn  
Gen Supt: W. E. Bohannon  
Under devel

#### HANCOCK IRON MINE

Box 285, Battle Mountain  
Owners: W. R. & Vera Hancock  
MINE, 35 mi S of Battle Mtn,  
undergr., Fe  
Idle

#### HARRIS, D F, A F & D M

Box 845, Tonopah  
KLONDYKE MINE, Esmeralda Co.,  
undergr., Pb, Ag, Au  
Idle

#### HAZEN & HARRIS

Box 138, Carson City  
BLACK EAGLE MINE, near Valmy,  
Mn  
Under devel

#### HEDMAN, JOHN A

Box 313, Pioche  
Gen Supt: Wm E. Rogers  
MINES, 30 mi W of Pioche,  
undergr., Ag  
Under devel

#### HENEBERGH, JOHN

Box 152, Round Mountain  
MINE, near Round Mt, U, Au, Ag  
Idle

#### HI-BAR CO

Box 80, Inlay  
Pres & Gen Mgr: E. C. Healt  
IRON CANYON MINE, placer, Au

WILLOW CREEK MINE, 13 mi S  
of Mill City, surface, Au  
Idle

#### HOMESTAKE MNG CO

Tonopah  
(See Tonopah Devel Co)

#### HUDSON, ARTHUR

Box 11, Manhattan  
STRAY DOG MINE, Nye Co., Au, Ag  
Under devel  
13-TON MILL

#### HUNLEY, WILLIAM M

Box 33, Lovelock  
SILVER STAR MINE, Star dist,  
Pb, Ag, Au  
Idle  
IRON HORSE MINE, 20 mi E of  
Lovelock, surface, Fe

#### IDEAL CEMENT CO

Henderson  
WHITE EAGLE PIT MINE, 6 mi N  
of Henderson, surface, gypsum  
MILL  
(Purchased from Fabco Products,  
Inc)

#### IMPERIAL OPERATING CO

583 Brighton, El Centro, Calif  
UNION LEAD (COMMONWEALTH)  
MINE, Galena dist, lode, Pb, Zn,  
Au, Ag, Cu

#### INDUST MIN & CHEM CO

8th & Gilman Sts, Berkeley, Calif  
Pres & Gen Mgr: L. R. Moretti  
JUPITER MINE, 3 mi S of Weeks,  
surface, fullers earth  
Intermittent oper by contractor  
(See Calif)

#### INTERSTATE OIL & DEVEL CO

Box 1186, Elko  
Pres: W. A. Hayes, 156 Montgomery  
St, San Francisco, Calif  
HILL GOLD PLACER, VISTA GP  
SILVER-LEAD LODE  
LITTLE GEM MILL, 75-ton flot,  
Tenabo

#### ISBEL CONST CO, (MNG CONTR)

Box 2361, Reno  
Pres: C. V. Isbell  
Ch Engr: H. R. Noel  
Purch Agt: W. J. Henley  
(See Ariz, Calif, New Mex, Wash)

#### JACOBSON, J F

Box 54, Goodsprings  
BULLION MINE, Yellow Pine  
dist, lode, Pb, Zn, Ag, Cu, Au  
BELL MINE, Lode, Pb, Ag, Cu  
Au  
YELLOW PINE, lode, Zn, Pb, Ag,  
Cu, Au  
SULTAN MINE, lode, Zn, Pb, Ag,  
Cu, Au  
Yellow Pine dist  
Idle

#### JEPPERSON, E R

Box 24, Battle Mtn  
BENTLEY GROUP MINE, Battle  
Mtn dist, lode, Pb, Ag, Cu, Au  
Under devel

#### JENSEN, WAL

Box 287, E Ely  
GRAND PRIZE MINE, lode  
Pb, Cu, Zn, Ag, Au  
ONETHA MINE, lode, Pb, Cu,  
Ag, Au  
White Pine dist  
Idle

#### JOHNSON, GEORGE H

Box 558, Lovelock  
C & M CLAIM, Pershing Co., Au, Ag  
Idle

#### KAISER ALUM & CHEM CORP

Box 391, Fallon  
Gen Supt: L. F. Miller  
Sec: Rita E. Agnew  
Purch Agt: H. F. Mayhew  
KAISER MINE, 73 mi E of Fallon,  
undergr., CaF<sub>2</sub>  
Mine Supt: Geo Dasher  
Prod: 119 tons  
125-TON FLOT MILL, Fallon  
Mill Supt: Robert Ginn

#### KENNECOTT COPPER CORP., NEV MINES DIV

McGill  
Gen Mgr: J. C. Kinnear, Jr  
Asst Gen Mgr: Paul Bett

Purch Agt: W. N. Ireland  
MINE, Ruth, surface, Cu, Au, Ag,  
MoS

Gen Supt, Mines: S. W. Smith  
Ch Engr: K. W. Boobier  
Fu Gen Foreman: C. L. Martin

#### DEEP RUTH MINE

Mine Supt: R. C. Hissel  
Idle  
21,000-TON FLOT CONCENTRATOR  
two reverberatories, McGill  
100,000,000 lbs Cu per year  
Mech-Elc Supt: W. K. Sanders  
Concen Supt: W. J. Albert  
Smelter Supt: Ed Penot  
Conc Supt: W. F. Jones  
Div Compt: R. W. Crosser  
NEV NORTHERN RY (Subsidiary)  
Gen Supt: H. M. Peterson  
(See Ariz, New Mex, N Y, Utah)

#### KEY WEST NICKEL & COPPER CORP

215 S 18th St, Las Vegas  
Pres & Gen Mgr: A. F. Carper  
VP: N. W. Staley  
Sec: John McKean  
Purch Agt: A. F. Carper  
KEY WEST MINE, Rive side via  
Moapa, 15 mi S of Bunkerville,  
surface, Cu, Ni, Pt  
Prod: 35 tons  
35-TON ACID LEACH PL

#### KIRBY CANYON MINES, INC

Box 105, Goodsprings  
Pres: G. G. Gressman  
VP: A. P. Robbins  
Sec: Julia Robbins  
KIRBY CANYON MINES, Good-  
springs, undergr., Pb, Ag  
Idle

#### KNOWLES & MONTROSE CO

Box 87, Mountain City  
GARNET HILL & MONTROSE  
MINES, undergr. & surface, WO<sub>3</sub>  
Under devel

#### KONCHER, LOUIS, JR

Box 101, Elko  
NEVER SWEAT MINE, 10 mi  
E of Mountain City, undergr.,  
Au, Ag, Pb, Zn, Cu  
Under devel

#### LEAD KING MINES, INC

Box 1895, Las Vegas  
Pres & Gen Mgr: James H. Mc-  
Carthy  
VP: Frank L. Grange  
Sec: Richard L. Neville  
MINE, 14 mi NE of Las Vegas,  
undergr. & surface, Pb, Ag  
Under devel

#### LINDSAY MINING CO

Box 1351, Mina  
Pres: Chas. Scharf  
VP: Dr. H. C. Campbell  
Sec: W. F. Bishop  
Gen Mgr: Kenneth W. Dunham  
GUN METAL MINE, 24 mi SE  
of Mina, undergr., WO<sub>3</sub>  
Prod: 30 tons  
GRAV MILL

#### LONDON EXT MINING CO

Beowawe  
GOLDACRES MINE, 30 mi S of  
Beowawe, surface, Au  
Supt: R. B. Warmbrodt  
480-TON CYAN MILL  
Supt: H. C. Bishop, Jr  
(See Colo)

#### LONG CANYON MNG CO, INC

c/o Archie F. Far  
2784 Jefferson Ave, Ogden, Utah  
Sec: Ben Van De Graff  
KNOB HILL MINE, 14 mi E of  
Lee, Ruby Range dist, undergr.,  
Pb, Ag

#### LORANGER, W E

Silver City  
WAYWARD MINE, Lyon Co., Au, Ag  
(Leased from St Joe Cons Mines)  
Idle

#### LOW, W L & C H OGEE

Box 429, Winnemucca  
RAINBOW MINE, Bottle Cr dist,  
lode, Cu  
Under devel

#### MACBOYLE, M & SAM HAIN

Box 325, Goldfield  
WISCONSIN GROUP MINE, Lode  
dist, lode, Au, Ag, Cu, Pb, Zn  
Idle

#### MANGANESE, INC

Box 2008, Henderson  
Pres: H. S. West  
VP: H. S. West, Jr  
VP & Gen Mgr: P. A. McGoanig  
Treas: Jos. Wilmo  
Met: F. W. Fischer  
Gen Supt: S. J. McCarroll  
Purch Agt: L. D. Richardson  
THREE KIDS MINE, 6 mi E of  
Henderson, surface, MnO<sub>2</sub>, Pb  
Mine Supt: Victor Howard  
Ch Mine Engr: John T. Atkins  
Mech Eng: R. Waters  
Met: F. W. Fischer  
Elc Eng: R. R. Raichlen  
Traffic Supt: V. Bell  
Controller: H. M. Alarid  
Prod: 2,000 tons  
1,200-TON FLOT MILL  
Mill Supt: J. Anderson  
Asst Mill Supt: Edward Lowman  
ROTARY KILN DEPT  
Henderson  
Kiln Supt: Wm Kendrick  
Cap: 120,000 tons per yr

#### MANHATTAN CONSOL MINES & DEVEL CO

Tonopah  
(See Arizona)

#### MARIGOLD MINE & MILL

Box 44, Valmy  
MINE, 4 mi S of Valmy, undergr. &  
surface, Au  
Idle  
(Leased to R. L. Brantley)

#### MARSAM ENTERPRISES INC

211 S Beverly Dr, Beverly Hills,  
Calif  
Pres: Samuel Weiler  
VP: Jules Berliner  
Sec-Treas: Selma Weiler  
Gen Mgr: F. D. Shuck  
T BONE MINE, 9 mi S of Austin,  
undergr., W  
50-TON CUSTOM MILL  
Under devel

#### MARSHALL MNG CO

Contact  
Gen Mgr: Maurice M. Marshall  
MARSHALL MINES, 1 mi W of  
Contact, undergr., Cu, Ag, Au  
Mine Supt: M. M. Marshall  
Asst Mine Supt: G. V. Marshall  
Mine Foreman: Leo H. Bricker  
Prod: 25 tons

#### MARY ANN PLACER MINE

Baker Stage via Ely  
Owners: States, States & Green  
MINE, 40 mi SE of Ely, Au, Ag  
Under devel

#### MED LEAD & SILVER MNG CO

First Nat'l Bank Bldg.  
Salt Lake City, Utah  
Pres: Pete Marthakis  
Gen Mgr: C. A. Elkins  
VICTORY CLAIMS, White Pine  
Co., Au, Ag, Zn, Fe  
Idle  
(Leased from O. H. Evans)

#### MERKTY BROK

Box 103, Fallon  
GRAND VIEW MINE, Washington  
dist, lode, Pb, Ag, Au, Cu, Zn  
Idle

#### METALLICS UNLIMITED

Box O, East Ely  
CAMPANELLA-PINE NUT MINE,  
4 mi NW of Cherry Creek, under-  
gr., scheelite  
Prod: 25 tons

#### MILLER MT MNG CO

c/o Jesse C. Coddough  
Star Rt, Lamo, Calif  
MILLER MT MINE, Esmeralda &  
Mineral Co., undergr., Pb, Zn, Ag  
Under devel  
NEV EXT & SILVER CITY GROUP,  
Buena Vista dist, lode, Pb, Zn, Ag  
Idle

#### METALLURGICAL DEVEL CO, INC

Box 181, Gardnerville  
Pres & Gen Mgr: Joe C. Morris  
VP: John S. Drendel  
Sec: E. W. Grauba  
RAMONA CLAIM, 12 mi E of  
Gardnerville, surface, WO<sub>3</sub>  
Prod: 18 tons  
50-TON GRAV-FLOT MILL

**MINERAL MATERIALS CO**  
1442 Westminister Ave.,  
Alhambra, Calif  
**BUDA VISTA IRON MINE**, Box 645,  
Lovelock, 20 mi E of Lovelock,  
surface, Fe  
See Calif

**MINERALS ENGR CO**  
Ely  
**MORTE CRISTO MINE**, WO<sub>3</sub>  
Prod: 150 tons  
(See Colo, Mont, Utah)

**MINERVA SCHEELITE MNG CO**  
Box 908, Ely  
Gen Mgr: R Stopper  
**SCHEELITE MINE**, 50 mi SE of  
Ely, undergr, W  
Prod: 13 tons  
25-TON GRAY MILL

**MINK, J W**  
540 9th St, Elko  
**ROSEBUD MINE**, 90 mi N of Elko,  
undergr, Au, Ag, Pb, Cu  
Under devel  
**LITTLE JOE MINE**, Goldcreek,  
93 mi N of Elko, surface, WO<sub>3</sub>

**MOBARK MNG CO, INC**  
c/o Carl Louche  
63 W Center St, Fallon  
**MONARK MINE**, White Wolf dist,  
lode, Au, Ag  
**ARGENTITE MINE & MILL**

**MORLEDGE, F L, LESSEE**  
Box 106, Overton  
**RED GORGE MINE**, Overton,  
Gibbs dist

**MUTUAL VENTURES SYN**  
400 Nees Bldg, Salt Lake City,  
Utah  
Pres: P C Lyon  
Gen Mgr: P C Lyon, Jr  
**GOLD NOTE MINE**, 57 mi S of  
Winnemucca, undergr, Pb, Ag,  
Au, Zn, Cu  
Under devel

**N & M MINING CO**  
Idaho  
Pres: H P Newman  
Sec: Ed R Moore  
Treas: D A Newman  
**COPPER KING GROUP**, 3 mi S  
of Idaho, undergr, Cu  
Supt: J J Kinsella  
Prod: 10 tons  
10-TON LEACH PL, Berlin

**NATIONAL COPPER MINES, INC**  
Box 122, E Ely  
Pres: H M Wilson  
VP: Paul C Lyon  
Sec: R C Jensen  
**KANSAS COPPER MINE**, McGill, 25  
mi NE of McGill, undergr, Cu, Ag  
Mine Foreman: P C Lyon, Jr  
Under devel

**NAT'L LEAD CO, BAROID DIV**  
Dunphy  
**ROSE MINE**, surface, barite  
Supt: Marcus Duffee  
(See Ark, Calif, Kans, Mo, S Dak,  
Tex)

**NAT'L LEAD CO, TITANIUM DIV**  
Henderson  
**TITANIUM REFINERY**  
Under devel  
(See Ark, Calif, Kans, Mo, S Dak,  
Tex)

**NATOMAS COMPANY**  
Battle Mountain  
Pres: H G Smith  
Sec: W Dumas  
Gen Mgr: John L James  
**GREENAN PLACER OPER**, 18 mi  
SW of Battle Mt, placer, bucket  
dredge, Au, Ag  
Prod: 9,000 cu yds  
(See Calif)

**NEEDLE PEAK FLUORSPAR**  
Battle Mountain  
**FLUORSPAR CLAIMS**, 49 mi SE  
of Battle Mt, surface  
Under devel  
(Leased to Ford T Frost)

**NEVADA FLAGSTONE QUARRIES, INC**

Box 1259, Las Vegas  
**RED BLUFF MINE**, Las Vegas

**NEVADA IRON ORE CO & PARKER BROS**  
c/o H S Thomas & H E Parker  
Box 242, Lovelock  
**IRON RR LEASE**, 25 mi E of  
Lovelock  
Supt: Chas Roe  
Foreman: F Parker  
Prod: 300 tons  
**BLAST FURNACE**

**NEVADA LEAD & ZINC CO**  
Lessee: M H Woodward  
2606 S State, Salt Lake City, Utah  
**KILLIE (NEV LEAD) MINE**, Spruce  
Mt dist, lode, Pb, Au, Ag, Cu, Zn  
Idle

**NEVADA-MASSACHUSETTS CO**  
Tungsten  
Pres: C M Segerstrom, Jr  
VP: M D Cronwall  
Treas: M D Jones  
Gen Mgr: W G Emminger  
**TUNGSTEN MINE**, 9 mi N of Mill  
City, undergr & surface, WO<sub>3</sub>  
Mine Supt: E Nash  
Mine Engr: D O'Keefe  
Prod: 100 tons  
500-TON GRAY-FLOT MILL  
Mill Supt: J R Caldwell  
Assayer: R V Noble

**NEVADA METAL MINES CO**  
222 Atlas Bldg, Salt Lake City,  
Utah  
Pres & Gen Mgr: H R Fisher  
VP: Leon Foonbeck  
**MINE**, near Imlay, Au, Ag, Pb  
Idle

**NEVADA MINE DEVELOPERS, INC**  
Winnemucca  
**LITTLE JUPITER MINE**, Sierra dist  
lode, Au, Ag, Cu, Pb, Zn

**NEVADA MONARCH CONS MINES**  
c/o H H Cazier, Wells  
**MONARCH MINE**, Elko Co, Ag, Pb,  
Zn, Cu  
Idle

**NEVADA PACIFIC DEVEL CO**  
Box 106, Gabbs  
Pres & Gen Mgr: G N Taass  
**COMPANY MINE**, 9 mi NE of Gabbs,  
undergr, WO<sub>3</sub>

**NEVADA RAWHIDE MNG CORP**  
150 2nd St, Cheney, Wash  
Pres: Clarence Davis  
VP: Nolas Brown  
Sec: Ernest Raden  
Gen Supt: H M Erb  
Geol: Ray Robinson  
**PYRAMID MINE**, 30 mi S of Fallon,  
undergr, Ag, Au, Pb  
Prod: 4 tons  
25-TON FLOT MILL, 3 mi from  
mine

**NEVADA SCHEELITE CORP, SUBSID OF KENNAMETAL, INC**

430 S Main St, Fallon  
Purch Agt: Geraldine Marsh  
**NEVADA SCHEELITE MINE**,  
Rawhide, 40 mi N of Hawthorne,  
undergr, scheelite  
Gen Supt: E M Colwell  
Mine Supt: H P Manny  
Mine Engr: E Hollingsworth  
Prod: 125 tons  
150-TON GRAY-FLOT MILL  
Mill Supt: Mark L Campbell

**NEVADA SILICA SANDS, INC**  
Box 150, Overton  
Gen Mgr: F L Morledge  
**SILICA MINE & NEV MILL**, Overton,  
surface  
Supt: E V Hickman  
250-TON FLOT MILL  
Supt: Walter Houtman

**NEVADA TUNGSTEN CORP**  
Box 194, Mina  
Pres & Gen Mgr: John Siskay  
**CENTRY MINE**, 15 mi E of Schurz,  
WO<sub>3</sub>  
200-TON GRAY MILL, Sodaville  
Assy: T W Melthous

**NEVADA URANIUM CO**  
Box 31, Winnemucca  
Pres: Gus Rogers  
VP: Jewell Rivers

**STALENS PRESENCE, Pershing Co., undergr, U<sub>3</sub>O<sub>8</sub>**  
Under devel

**NEW WORLD EXPLOR, RESEARCH & DEVEL CO**  
310 S Virginia St, Reno  
Pres: Russell T Miller  
VP & Mech Engr: F Quitt  
VP & Geol: R Decker  
Met: John Uhaide  
**ALADDIN MINE**, Box 908, Elko,  
30 mi SW of Elko, undergr, Pb, Ag,  
Cu  
Prod: 50 tons  
**MCCOY MINE**, 30 mi S of Battle  
Mt, surface, Fe  
Idle  
**CARICO MANGANESE MINE**, 50 mi  
S of Battle Mt, surface, Mn  
Under devel

**NIGHTINGALE MINE**  
Lessee: The Wolfman Co  
Lovelock  
Mgr: John Heizer  
**MINE**, Pershing Co, W

**NINETY-NINE MINE, INC**  
Goodsprings  
Pres & Supt: A J Robbins  
**MINE**, Goodsprings, Cu

**NOODAY MINES, LTD**  
Box 11, Wells  
Pres: J B White  
VP & Gen Mgr: F H Crosby  
Sec: H G White  
**NOODAY MINE**, 55 mi SW of  
Wells, undergr, Pb, Zn, Ag  
Under devel  
**NOODAY MILL**, under const

**NUNN COMPANY, THE**  
Box 133, Overton  
Gen Mgr: Paul G Nunn  
**MINE**, surface, silica sand  
Supt: L P Keller  
Engr: C L McCallum  
300-TON HYDRAULIC MILL

**ONIO MINES CORP**  
76 E McKicken Ave,  
Cincinnati, Ohio  
**ONIO MINE**, Goldpoint, undergr,  
Au, Ag  
Idle  
**CYAN MILL**  
Under devel

**OLD ENGLISH GOLD CORP**  
Box 111, Provo, Utah  
Pres & Gen Mgr: Joseph Hafen  
VP: Carl J Harris  
Purch Agt: Leon Newren  
**OLD ENGLISH MINE**, Troy Canyon,  
undergr, Au  
Supt: Owen Peterson  
30-TON FLOT MILL  
Idle

**ORIG KLONDYKE DIVIDE MNG CO**  
Box 146, Tonopah  
**ORIG KLONDYKE MINE**, Klondyke  
dist, lode, Ag, Au, Cu, Pb  
Idle

**OTT, VICTOR**  
55 Eddy St, San Francisco 9,  
Calif  
**ALLIED MINES**, lode, 100 mi  
from Fallon, surface, CaF<sub>2</sub>

**PACIFIC BUTTE MINES**  
c/o W B Nalamith, Tonopah  
**MONTEZUMA MINE**, Esmeralda  
Co, Au, Ag, Pb  
**EVA MINE**, 25 mi S of Tonopah,  
undergr, Pb, Ag, Au  
**NEW YORK MINE**, 29 mi W of  
Goldfield, undergr, Pb, Ag, Au  
Idle

**PAYMASTER MINE**  
Battle Mountain  
Owner: Paul C Christopher  
**MINE**, 19 mi SE of Battle Mt,  
undergr, Ag, Au, Pb  
Under devel

**TEER, GALE G**  
Eastgate via Fallon  
**ORO PLATE MINE**, Churchill Co,  
Au, Ag  
Idle

**PETERSON, G A**  
287 W 4th St, Carson City  
**NEW POTOMI MINE**, 25 mi S of  
Mina, Candelaria (Columbus)  
dist, undergr, Pb, Zn, Ag, Au  
Supt: Joe Marinelli

**CEDAR CHEST**, 28 mi E of Mina,  
undergr, WO<sub>3</sub>

**PETERSON, M F & LORENA**  
Box 131, Tonopah  
**OLD COWGIRL MINE**, 30 mi NE of  
Tonopah, undergr, Au, Ag  
Under devel  
**M & M (MERCURY MT) MINE**,  
47 mi NE of Tonopah, undergr, Hg  
Prod: 2 tons

**PETERSON MNG & MLG CO**  
Austin  
Owners: Peterson & Fisher  
**MINE**, Lander Co, Mn

**PETERSON, W S**  
Sulphur  
**STREETER MINE**, 4 mi E of  
Sulphur, surface, Pb, Ag, Cu, Zn  
**SULPHUR MILL**, S

**PHILLIPS, EDWARD H**  
Gibbs  
**ILLINOIS EXT CLAIMS**, 12 mi  
N of Gabbs, Pb, Zn, Ag, Au  
Idle

**PIOCHE MINES CONS INC**  
Pioche  
**POORMAN MINE**, Pioche dist, lode,  
Pb, Ag, Au, Cu, Mn

**PLATORIA URANIUM CORP**  
407 University Bldg, Denver 2,  
Colo  
Pres: A N Sweet  
VP: J M Anderson  
Sec-Treas: Irving Linder  
**MOONLIGHT, FORGET ME NOT CL**,  
Winnemucca, U<sub>3</sub>O<sub>8</sub>  
Undergr production

**PORTLAND MINE & LAUGHTON & CAUSTEN MILL**  
Box 114, Lovelock  
**MINE**, 25 mi N of Lovelock, undergr,  
Au, Ag  
Lessee: Earl Tucker

**PRINCE CONS MNG CO**  
318 Kearns Bldg, Salt Lake City,  
Utah  
Pres: David L Gemmill  
Sec-Treas: R Warburton  
**PRINCE MINE**, Zn, Pb, Au, Ag  
(Leased to Comb Metals Reduction  
Co)

**PYRAMID MINING CO**  
c/o Fred Hess, Virginia City  
**PYRAMID MINE**, Comstock dist,  
lode, Au, Ag  
Idle

**PYRAMID CO, INC, LESSEE**  
Silver Peak  
**M G L MINE**, Pershing Co, WO<sub>3</sub>

**RED HILL FLORENCE MNG CO**  
Goldfield  
Pres & Treas: Frank J Friday  
VP: J W Bosch  
Sec: A Frank, Tonopah  
Gen Mgr: Wm J Frank, Tonopah  
**FLORENCE MINE**, 1 mi E of  
Goldfield, undergr

**REDUCTION MLG CORP**  
Searchlight  
**MILL**, Au, Ag, Pb, Cu  
Idle

**REED, H E & AUGUS ROGERS**  
Box 31, Winnemucca  
Gen Mgr: H E Reed  
**RED ROCK MINE**, 35 mi W of Imlay  
undergr, lode, Au  
3 TON AMALG PL  
50-TON MILL

**REGAN, JOHN**  
Mason  
**SANTA CRUZ & EMPIRE MINE**,  
Mineral Co, Ag, Pb, Zn  
Idle  
**MCCONNELL LODE**, Yerington dist  
Cu, Ag  
Idle

**RENO PRESS BRICK CO**  
Box 116, Reno  
**GEGGER MINE**, Washoe Co, clay

**REVILLE LEAD MNG CO**  
Box 172, E Ely  
Pres & Gen Mgr: F Farnsworth  
Dir: H M Johnson  
Mgr: Wayne Cole  
**REVILLE LEAD MINE**, W of  
Reville, undergr, Au, Ag, Pb, Zn

Mine Supt: W Cole  
Asst Mine Supt: Neida Cole  
Engrs: F W Millard & Son  
Purch Agt: H W Young  
Assay: M Pray  
Idle

# RICE, JEFF & JOHN A

FRIDE  
Box 322, Winnemucca  
RIO #1 & 2, Au, Ag  
KING GOLD #2 MINE, Winnemucca  
(Ten Mile) dist, Au, Ag

# RICE, OWEN

Eureka  
DOE RUN MINE, Eureka Co, Ag, Pb

# RIECK, H R & HOALST, BLAINE C

Battle Mtn  
SILVER CHIEF MINE, 8 mi NE  
of Battle Mtn, undergr & surface  
Idle

# RIP VAN WINKLE CONS

MNG CO  
Box 1550, Salt Lake City, Utah  
RIP VAN WINKLE MINE, Elko,  
Au, Ag, Pb, Zn  
125-TON FLOT MILL  
Idle

# ROBISON, SAM M

Box 1268, Ely  
COLUMBIA & KEYSTONE MINE,  
1 mi E of Rhy, undergr, surface,  
Zn, Pb, Cu, Au, Ag, Mn  
ISSIC, Lane City, 3 mi W of Ely,  
undergr, Mn, Zn, Pb, Ag  
Prod: 10 tons  
ROBISON URANIUM MINES,  
Atlanta  
Gen Mgr: Sam M Robison  
Asst Gen Mgr: Donald M Robison

# ROCHESTER CONS MINES CO

Box 521, Lovelock  
ROCHESTER MINES, undergr, Au,  
Ag  
Supt: M E Bohannon  
Cons Engr: S B Wright  
Idle

# ROCK HILL TUNGSTEN MINE

Box 119, Mina  
Operator: Mrs Irene Sykes  
Idle

# ROCKY HILL TUNGSTEN CO

Box 961, Yerington  
Sec-Treas: Leo Schmitt  
Gen Supt: Jack Lindsey  
MINE, surface, WO<sub>3</sub>  
Under devel

# ROGERS & GEIGER

Box 31, Winnemucca  
ANTELOPE SPRINGS MINE, undergr,  
Ag, Pb, Zn, Cu  
Under devel

# RONO, GEORGE W

P O Box 15, Manhattan  
VIRGINIA CITY PLACER, Manhattan  
dist, Au, Ag  
Idle

# ROOT ZINC LEASE

Box 156, Goodsprings  
Gen Mgr: E K Hamilton  
Supt: L F Jacobson  
BOSS, PILGRIM, ROOT & YELLOW  
PNE MINES, Ag, Pb  
75-TON GRAV MILL  
Idle

# ROSEGOLD URANIUM CORP

309 Davis St, San Francisco, 11  
Calif  
Pres: M E Bohannon  
VP: T L Withers  
Sec & Gen Mgr: Albert S Simrak  
GRANITE POINT MINE, Humboldt  
Co, UO<sub>3</sub>  
Under devel

# ROSEN CRANS MINE

Pioche  
Pres: Urban Cole  
Gen Mgr: J G Hulise  
DEMOCRACY MINE, 47 mi N of  
Pioche, undergr, Mn, WO<sub>3</sub>  
Idle

# ROUND MT GOLD DRG CORP

1211 Pac Mut Bldg, Los Angeles,  
Calif  
ROUND MT MINE, placer, 98 mi N  
of Tonopah, Au, Ag  
Idle

# ROVERAN PARTNERS

Box 161, Elko  
Pres & Gen Mgr: R G McIntosh  
Gen Supt: A Stefan  
Mech Engr: V Jones  
BELLVIEW MINE, 64 mi SE of Elko,  
undergr, Pb, Ag, Cu  
Under devel

# RUGGLES, A L & SONS

Cherry Creek  
LAUGHING INDIAN GP, 3 mi S of  
Cherry Cr in Egan Canyon, undergr,  
WO<sub>3</sub>  
Under devel  
EXCHEQUER GP, 4 mi NW of Cherry  
Cr, undergr & placer, scheelite, Au,  
Ag  
URANIUM CLAIMS, Telegraph mag  
dist  
Under devel

# RUNDBERG, R L & LARS

Austin  
URANIUM CLAIMS  
Under devel

# RUTH ELDER MINING CO

Box 158, Searchlight  
Owner: Willett Barton  
RUTH ELDER MINE, 2 mi N of  
Searchlight, undergr, Au, Ag  
Idle

# SALT LAKE-PIOCHE MNG CO

440 S 4th St, Salt Lake City, Utah  
Pres: N H Martin  
VP: L W Hillman  
Sec: O H Martin  
APEX & FINANCIER MINES, 1 mi  
SE of Pioche, Au, Ag, Pb, Cu

# SAN RAFAEL MINE

Gabbs  
Leases: L H Dickens, Hill &  
Chistovich & Charles Hammock  
MINE, 16 mi N of Gabbs, Quartz  
Mt dist, undergr, Pb, Zn, Au, Ag  
Idle

# SEABISCUIT MINE

Box 34, Goodsprings  
MINE, Yellow Pine dist, Pb, Zn  
Idle  
(Leased to Thos J Hammons)

# SEARCHLIGHT CONS MINING

& MILLING CO  
c/o Homer Mills, Searchlight  
BLOSSOM MINE & MILL, Clark Co,  
undergr, Au, Ag  
GOOD HOPE GROUP, Searchlight  
dist, lode, Au, Ag  
Idle

# SEARCHLIGHT HOMESTAKE

MINING CO  
Box 55, Searchlight  
Pres & Gen Mgr: F C Moore  
Sec: Donald Peters  
Gen Supt: F C Moore, Jr  
QUARETTE MINE, 1 mi S of  
Searchlight, undergr, Au, Ag, Cu,  
Pb  
Idle

# SEE, NEWTON A

Box 327, Winnemucca  
ORANGE MINE, Warm Springs dist,  
lode, Au, Ag  
COYOTE MINE, Winnemucca dist,  
lode, Au, Ag

# SEGERSTROM, HEIZER

MINES  
Lowell  
Opr: Dodge Construction, Inc  
IRON MINES, surface, truck, Fe  
100-TON CRUSHING & SCREENING  
PL

SUTHERLAND MINE, 15 mi NE of  
Eatonville, Sh  
HOLLYWOOD MINE, 30 mi NE of  
Lovelock, undergr, Sh

# SHAW, CLARK C

662 Humboldt St, Fallon  
CAMP TERRELL CLAIMS, 38 mi  
S of Fallon, Churchill Co, Holy  
Cross dist, undergr, Ag, Au, Pb  
CONCENT TABLE

# SIERRA TALC & CLAY CO

Box 390, S Pasadena, Calif  
OASIS MINE, 55 mi SW of  
Goldfield, undergr, talc  
Supt: F A Bachich  
Engr: D B Kempfer  
(See Calif, Heb)

# SILVER DYKE MINE

Box 238, Mina  
Owner: Chauncy Flory

MINE, 13 mi W of Mina, undergr.  
Mine Supt: Tony Weiler  
Mine Foreman: Sherman Egger  
Prod: 40 tons  
70-TON GRAV MILL, Mina  
Mill Supt: Lynn Glendinning

# SILVER ROCK MINES CO

c/o H R Fisher, 221 Atlas Bldg,  
Salt Lake City, Utah  
SILVER ROCK (WYNONA) MINE,  
Eureka dist, lode, Ag, Cu, Pb,  
Au  
Idle

# SIMPLOT, J R, CO

Continental Bank Bldg,  
Boise, Idaho  
SIMPLOT IRON MINE, 30 mi S  
of Pallsado, undergr  
Supt: John Kobe  
Idle  
(See Colo, Idaho)

# SINGAYZE SYNDICATE

Wabunika  
MINE, surface, perlite  
Mgr: R J Penrose  
Idle

# SIRI & GUBLER

Box 522, Ely  
GREAT VALLEY MINE, 45 mi W  
of Ely, undergr, Pb, Ag, Cu  
Idle

# SKY LINE ANNEX MINE

Box 1042, Tonopah  
Operator: L B Sammons  
MINE, 18 mi W of Tonopah,  
undergr, Pb, Zn, Cu  
Idle

# SHOREEN & SONS

Box 142, Overton  
KAOLIN WASH SILICA SAND MINE

# STANDARD SLAG CO

Box 3, Gabbs  
Pres: L A Beeghly  
VP: W E Bliss  
Sec-Treas: W H Kilcawley  
Western Mgr: R O Jones  
Asst Mgr: S V Wines  
GREENSTONE MINE, 2 mi E of  
Gabbs, surface, magnes  
Supt: F W Reinmiller  
Engr: J R Harmon  
Prod: 300 tons  
300-TON GREENSTONE MILL,  
calcining  
Mill Supt: F W Reinmiller  
Asst Supt: B J Wiley

# STEWART, H N

Cornell St, Big Pine, Calif  
HIDEOUT MINE #1, 45 mi SW of  
Goldfield, surface, talc  
LOUISE MINE

# STRAND, WILLIAM

690 Wilkes St, Fallon  
RAWHIDE TUNGSTEN MINE, 2 mi  
NE of Rawhide, undergr, scheelite  
Under devel

# STORMY DAY MINE

61 State St, Reno  
MINE, 14 1/2 mi S of Gerlach,  
undergr, WO<sub>3</sub>  
Leases: Anderson, Bible &  
McDonald

# STREETER, O J

Box 485, Elko  
SUMMIT VIEW MINE, Elko Co.,  
Ag, Pb  
Idle

# STRESHLEY, AUGUST

Austin  
MOOMBA MINE, Twin River dist,  
lode, Pb, Au, Ag, Cu, Zn  
Idle

# SUMMIT KING MINES, LTD

Box 532, Fallon  
Pres: Ira B Joralemon  
Gen Mgr: Percy G Dobson  
(See Tonopah Devel Co)

# SUMMIT QUEEN MINING CO

Box 3044, Reno  
Pres & Gen Mgr: S G Baker  
VP: Nello Goufiantis, Jr  
Sec-Treas: Harry Boer  
HONOLULU MINE, 30 mi E of  
Fallon  
Idle

# SUNNYSIDE MILLING CO

Austin  
Owner: Samuel Weiler

Gen Mgr: F D Shuck  
SPENCER HOT SPRING MILL, 80-  
ton grav-flot, scheelite

# SUNNYSLOPE MINE

Rt 1, Box 541, Reno  
Owner: Wesley J Gritton  
MINE, 35 mi SE of Yerington,  
undergr, Au, Ag  
Idle

35-TON MILL, plates, concs

# SYLVIA D MINING CO, INC

Rawhide via Fallon  
RAWHIDE PLACER MINE, Rawhide  
dist, placer, Ag, Ag

# T Y G MINES CO

Tonopah  
URANIUM CLAIMS

# TANNER, B L

Box 37, Searchlight  
SEARCHLIGHT INSUL PROD MINE,  
7 mi NW of Searchlight, surface,  
perlite  
MILL

# TONOPAH DEVEL CO

Tonopah  
Opr: Summit King Mines, Ltd,  
& Homestake Mng Co  
MINE, 1 mi N of Tonopah  
(See Summit King Mines, Ltd, in  
Nev & Homestake Mng Co in S Dak,  
Utah)

# TONOPAH DIVIDE MNG CO

Box 1554, Reno  
Pres: H H Luce  
VP: W E Sirbeck  
DIVIDE MINE, 6 mi S of Tonopah,  
undergr, Au, Ag  
Idle

# TONOPAH MNG CO OF NEV

c/o H A Johnson, Resident Agent,  
Tonopah  
MIZPAH MINE, Manhattan dist,  
lode & mill, Au, Ag  
Idle

# TOULON MILL

Lovelock  
Leases: The Wolfram Co  
Mgr: John Heiser  
TUNGSTEN MILL, Fershing Co

# TRI-STATE METALS, INC

Mesquite  
Pres: T J Louis  
Gen Mgr: J L Desmond  
Sec-Treas: Reuben Ten Haken  
Purch Agt: Earl Bullis  
Geol: Gordon Jackson  
Met: Arnold Mosier  
SILVER LEAD MINE, 18 mi S of  
Mesquite, undergr, WO<sub>3</sub>  
Mine Supt: Geo B Hustman  
100-TON GRAV MILL, under coast  
Mill Supt: F W Mitchell

# TUFFSTONE PROD CORP

Box 150, Sparks  
MINE & MILL  
Idle

# TUNGCO OF NEVADA, INC

1st Nat'l Bank Bldg, Reno  
(c/o A R Kingsard)  
Pres: Paul R Sloan  
SEARCHLIGHT MINE, surface, WO<sub>3</sub>,  
Mo, Au

Ranchina, Elko  
VP & Gen Mgr: A R Kingsard  
Under devel

MAGN ZEP under constr, Newark  
Valley, White Pine Co

# TUNGSTEN MTN MNG CO

511 Securities Bldg, Seattle 1,  
Wash  
Pres: B W Porter  
VP: Emil Mattson  
Sec: Freda Mills  
TUNGSTEN MTN MINE  
Box 486, Fallon  
Gen Mgr: Arthur Lakes  
Mine Foreman: Leonard Winroth  
YANCY MILL, Gabbs  
Mill Supt: Ralph Adams

# UNITED CANADIAN

URANIUM CORP  
Denver, Colo  
MOONLIGHT URANIUM CLAIMS,  
N of Winnemucca  
(See Calif)

# UNITED MINERALS CORP

38 Feit Bldg, Salt Lake City,  
Utah  
Gen Mgr: C W Snyder, Jr



**RIP VAN WINKLE, LUCKY STRIKE, TEMPLE TUNGSTEN, MONTE CRISTO MINES**  
(See Ariz)

**U S GYPSUM CO**  
GYPSUM MINE, Empire, surface,  
KODAK FELITE MILL, Box 31,  
Palm (Dodge Cone Co.)  
(See Calif, Colo, Ill, Iowa, Mass,  
Mich, Mont, New Mex, Okla, Tex,  
Utah, Va, Wash)

**U S LIME PROD CORP**  
Box 127, Henderson  
Pres: W O Anderson  
VP: J I Anderson  
Gen Mgr: K Ellsworth  
Sec: E B Long  
Gen Supt: L N Grindell  
SLOAN MINE, Box A, Sloan, 10  
mi S of Las Vegas, surface,  
dolomite  
Supt: Wm E Ellis  
ABOLIME MINE, Box A, Sloan,  
10 mi S of Las Vegas, surface,  
dolomite  
Supt: W C Brown  
120-TON MILL, Sloan, calcining  
& processing  
240-TON PL, Henderson,  
calcining & processing  
Plant Mgr: Wm B Mainor

**U S MERCURY CORP**  
348 Unity Terrace, Reno  
Pres: B L Scheinman, 40 Exchange  
Place, New York City  
JOSEFA MINE, McDermitt, Hg  
Gen Mgr: Jay A Carpenter  
Under devel

**U S VANADIUM CO**  
30 E 42nd St, NY, NY  
RILEY MINE, R & House, Pototsi  
dist, Humboldt Co, undergr,  
surface, WO  
Mine Engr: Harry Trollope  
(See Calif, Colo, N Y)

**URANIUM METALS, INC**  
2372 Allison Bl, Denver, Colo  
URANIUM CLAIMS, Humboldt Co

**URANIUM MINES OF AMERICA, INC**  
207 Darling Bldg, Elk Lake City,  
Utah  
Pres: E G Frawley  
URANIUM CLAIMS  
(See Utah)

**URANUS X MINES, INC**  
2802 One St, Boise, Idaho  
Acting Mgr: Ernest Oberhillig  
ROBINETTE MINE, Contact, WO,  
Mo, Cu  
Under devel

**WAM CHANCE CORP, LINCOLN DIV**  
Temptate

Acting Gen Supt: E G Woods  
Geol: Armand Janine  
Mast Mech: Chas Wilson  
LINCOLN MINE, Temptate  
Mine Supt: R C Kirchner  
Mine Foreman: C E Petterhoff  
Mine Engineer: Geo Peck  
Prod: 820 tons (12 day basis)  
100-TON FLOT-GRAY MILL  
Mill Supt: Fred Yarcho  
Mill Foreman: A Hunt  
Assay: Ernest Mohr  
(See Calif)

**WALKER CORP**  
Box 163, E Ely  
Pres: R T Walker  
VP: W J Walker  
Sec: B T Walker  
WARD MINE, 17 mi S of Ely  
(off Pioche Hwy), undergr, Ag,  
Pb, Cu  
Under devel

**WELCH, ROBERT**  
178 Sparks Bl, Sparks  
WELCH FLUORSPAR MINE,  
Adven, 60 mi W of Pioche,  
undergr, CaF<sub>2</sub>  
Under devel

**WETHERS, C A**  
Box 175, Mina  
DOUGLAS, MARY ANN, FORTUNA  
MINES, 6 mi SW of Mina, surface  
& undergr, Au, Ag  
Under devel

**WHELCHEL MINES CO**  
Caldwell, Idaho  
Pres: Wm E Whelchel  
VP: Ralph A Whelchel  
Sec-Treas: Thressa M Whelchel  
NATIONAL MINE, National, electrum  
Under devel  
(See Utah)

**WINNEMUCA MT MINES CO**  
Box 31, Winnemucca  
Pres: O R Manula  
Gen Mgr & Purch Agt: Gus Rogers  
REXALL, GOLD HILL, STAR,  
TUNGSTEN MINES, 3 mi N of  
Winnemucca, undergr, WO<sub>2</sub>  
Mine Supt: A L Enright  
40-TON GRAY MILL,  
Under devel

**YUDA DIKE MINES, INC**  
Pioche  
Pres: John A Hedman  
VP: Allan Gustafson  
Gen Mgr: Alexander Lloyd  
Sec: F L Heidenreich  
MINE, Pioche, undergr, Pb, Zn,  
Ag, Mn  
Under devel

## NEW HAMPSHIRE

**ASHLEY MINING CORP**

West Rumney  
Pres: H A Ashley  
VP & Engr: E M Shipp  
BERYL MT MINE, Acworth  
MINES in Grafton Co, feldspar,  
mica, quartz, columbite

**GOLDING KEENE CO**  
Box 2151, Trenton 2, N J  
COLONY & KIDDOR MINES,  
Alstead, feldspar, mica, quartz

**INTERNAT'L MIN & CHEM CORP**  
20 N Wacker Dr, Chicago, Ill  
MINES, various parts of N H  
(See Ariz, Colo, Fla, Ill, Me,  
Miss, New Mex, N Y, N Dak,  
Ohio, S Dak, Tenn, Va)

**WHITENALL CO, INC**  
17 Battery Pl, New York 4, NY  
Pres: A E Davison  
VP & Gen Mgr: F B Verplanck  
VP: J A Nelson  
Sec-Treas: L G Clark  
RUGGLES MINE, Grafton,  
surface, feldspar, mica, beryl,  
spinelume

## NEW JERSEY

**ALAN WOOD STEEL CO**  
Dover  
Gen Supt: W F Schenck  
SCRUB OAKS MINE, undergr, Fe  
Asst Supt: Chas Weller  
Mine Engr: Walter McDougal  
Mine Foreman: S J Usinowicz  
Mill Foreman: H V Henderson  
WASHINGTON MINE  
Supt: Wilfred Keats

**AMER SMLTO & REFIN CO**  
Barber  
FEARTH AMOY PLANT  
Mgr: G Weiss  
(See Ariz, Calif, Colo, Ida, Ill, Md,  
Mont, Neb, New Mex, N Y, Tex,  
Utah, Wash)

**NEW JERSEY ZINC CO**  
100 Front St, New York,  
N Y  
Co of Ed H Hardensborgh  
Pres: R L McCann  
VP: S S Goodwin  
Mgr, Purch: W C Dunlap  
MINES, Ogdensburg, Zn  
MAG & GRAY MILLS  
Gen Supt: W F Evans  
(See Colo, New Mex, Va, Wisc)

**RICHARD ORE CO, SURESD COLO FUEL & IRON CORP**  
Wharton  
RICHARD MINE, near Wharton,

undergr, Fe  
Supt: Richard Dockery  
Safety Engr: W P Galligan  
Mine Engr: A J Gots  
Mech Engr: J J Burchko  
Elec Engr: George Gauthorn  
Elec: Harry Martin  
600-TON MAGNETIC MILL  
Supt: F W Keim

**RINGWOOD IRON MINES, INC**  
Ringwood  
Pres & Gen Mgr: David A  
Goodkind  
Asst Mgr: R I Goodkind  
Sec: C S Stern  
PETERS & CANNON MINES,  
Ringwood, 45 mi NW of NY, Fe  
Under devel  
Supt: Harold Kramer  
1,000-TON MAGN-GRAY MILL  
Supt: N K Karchmer  
Foreman: W Stephens

**U S METAL REF CO**  
(Controlled by Amer Metal Co, Ltd)  
61 Broadway, New York, N Y  
Ch of Ed: Walter Hackschild  
Pres: Hugo de Neufville  
Sec: T W Childs  
VP & Mgr: F H Dyke  
Asst Mgr: Douglas Tennant  
Purch Agt: Millard Merrill  
SMELTER & REFINERY,  
Cateret, Co, Ag, Au  
Prod: 144,000 tons Cu per year  
60,000,000 oz Ag per year  
900,000 oz Au per year  
40,000 tons misc per year

**WARREN FOUNDRY & PIPE CORP**  
Mt Hope  
MOUNT HOPE MINE, undergr, Fe  
Gen Supt: Henry J Schwellenbach  
Geol: F H Kykhynew  
Elec Engr: Chas Struble  
Saf Engr: R F Brogan  
Mine Supt: Jack D Hien  
Mine Foreman: Gregg Sad, Howard  
Ruckingham, John Sheplek  
Mine Engr: Theo Holland  
2,000-TON FLOT-MILL  
Mill Supt: Henry Schwellenbach  
Asst Supt: Preston Davenport  
(See N Y)

## NEW MEXICO

**ALL STATES URANIUM CORP**  
Dove Creek  
Pres: Thos H Skidmore  
VP: Arthur C Stearns  
Sec: Norman Gillespie  
MINE, Grant area  
Mine Supt: Joe W McCormick  
Under devel

**ALLIED CHEM & DYE CORP GEN CHEM DIVISION**  
Box 631, Deming  
Mgr, Mng Oper: Robert H Dickson  
Asst Mgr, Mng Oper: Wilbert J  
Tropp  
DEMING MINES  
Supt: Mike Scheriff  
100-TON FLOT MILL, Deming  
(See Colo, N Y, Va)

**AMERICAN SMELTING & REFINING CO SOUTHWESTERN DIVISION**  
813 Valley Nat'l Bank Bldg,  
Tucson, Arizona  
Mgr: T A Swedden  
Ch Geol: Kenyon Richard  
GROUND HOG UNIT, Vanadium,  
New Mex, undergr, Pb, Zn  
Supt: W C Wallder  
DEMING MNG UNIT,  
600-TON FLOT PL  
Supt: H W Kassta  
Idie  
(See Ariz, Colo, Calif, Idaho, Mo,  
Mont, N Y, Okla, Utah, Wash)

**AMERICAN URANIUM CO RED BLUFF # 1, #2, U<sub>3</sub>O<sub>8</sub>**

**ANACONDA COPPER MNG CO, NEW MEX URANIUM OPER**  
Granada  
Mgr: John B Knechel  
Gen Supt: Albert J Fitch, Jr  
Mill Supt: W J Roberts

Plant Met: Dale C Matthews  
Ch Geol: Robert Lynn  
Mine Supt: J P Herndon  
Master Mech: T M Fitch  
Ch Chem: Jack Pale  
Ch Pilot: Woodrow House  
Ch Clerk: F G Holmberg  
Foreman, Ore purch.-crush, &  
sampling pl: Amos Leach  
Power Pl Supt: Wayne Hitchcock  
Ch Elec: M D Barnaby  
Foreman, Jackpile Mng,  
B F Barlow  
Foreman, Sec 9 Mt: A H Head  
Storekeeper: R L Millard  
JACKPILE, NORTH JACKPILE,  
WOODROW, SECTION 9,  
CRACKPOT, ALTA, SECTION 37  
MINES, U<sub>3</sub>O<sub>8</sub>  
Producing  
(See Calif, Ida, Mont, Nev, NY,  
Utah)

**ATWOOD COPPER MINES**  
Box 638, Lordsburg  
Mgr: Ira L Mossy  
ATWOOD MINE, 3 mi S of Lords-  
burg, undergr, Cu, Au, Ag, Pb

**BANNER MINING CO**  
Lordsburg  
Gen Supt: E S Bowman  
BONNEY & MISER'S CHEST  
MINES, Lordsburg, undergr, Cu  
Mine Supt: Coleman Dunkerson  
Mast Mech: Arthur Smith  
Ch Clerk: Frank Bowman  
Prod: 400 tons  
225-TON FLOT MILL  
Mill Supt: Fred Johnson  
(See Ariz)

**BIG CHIEF MINING CO**  
7028 2nd St, N W  
Albuquerque  
BIG CHIEF MINE in James  
Mountains, surface, crusher,  
Bernalillo Co, Pumice

**BILLINGSLEY, BEN & WILSON, ROY**  
Box 168, Duncan  
CONSOLIDATION MINE, surface &  
1/2 plant, Grant Co, Mn

**BLACK HAWK CONS MINES CO**  
735 N Water St, Milwaukee 2,  
Wisc  
Pres: H A Apple  
Gen Mgr: Ira L Wright  
Sec: E M Eshier  
HANOVER & LUCKY BILL OPS, 14  
mi E of Silver City, undergr, Zn,  
Pb, Cu, Ag  
Idie

**BRUELL, EUGENE**  
1817 Alabama Ave, Silver City  
BEAR MOUNTAIN MINE, Grant  
Co, Mn

**BUCKEYE MINES, INC**  
709 Central Ave N E,  
Albuquerque  
Pres & Gen Mgr: V F Foy  
VP & Asst Mgr: R E Willis  
Sec: W R Baxter  
Geol: T E Smith  
BUCKEY MINE, 18 mi NE of  
Magdalena, undergr, Cu, Ag, Au  
Mine Supt: W V McGuire  
Idie

**BURRO CHIEF MINES**  
Box 590, Deming  
Pres: H E McCray  
BLACK EAGLE MINE, Red Rock,  
undergr, Mn

**C & W MINING CO**  
Cerrillos  
EVELYN MINE, Santa Fe Co, Cu  
CALUMET & HECLA, INC  
Albuquerque  
CLAIMS, Canonic Indian  
Reservation, U<sub>3</sub>O<sub>8</sub>  
Explor  
(See Mich)

**CARLSBAD SALT PRODUCTS, INC**  
104-A, East Fox, Carlsbad  
Owner: Kathleen Bonds  
SALT MINE

**CASH ENTRY GROUP**  
Los Cerrillos  
Gen Supt: Sam Nolan  
Cool-Met: W Hassard  
MINE, undergr, Pb, Zn, Ag  
Under devel  
100-TON MILL



**CLARY, W B**

Box 443, Deming  
**BERCHFIELD MINE**, Luna Co, Mn

**CURTIS SALT CO**

Quemado  
 Owner: I W Curtis  
**MINE**, near Quemado, dry lake,  
 solar evaporation, salt

**DOOLEY BROS PUMICE, INC**

108 Tulsa Dr, NE,  
 Albuquerque  
 Pres: Gilbert L Dooley  
 VP: J R Dooley  
 Sec: Maggie Dooley  
 Pl Supt: H H Williams  
 Treas: J Mac Dooley  
**MINE**, 30 mi from Domingo,  
 Sandoval Co, surface, placer,  
 pumice, scoria  
 Cap: 1,000 cu yds

**DRUNZER & CASNER**

Box 307, Santa Rosa  
 Pres: R S Casner  
 Gen Mgr: Q M Casner  
**STAUBER MINE**, 15 mi SW of  
 Santa Rosa, surface, Cu

**DUVAL SULPHUR & POTASH CO, POTASH DIV**

Box 510, Carlsbad  
 Res Mgr: G E Atwood  
 Asst Res Mgr: J E Tong  
 Ch Engr: B G Messer  
 Safety Engr: H L Shively  
 Supt, Maint & Constr: H A London  
 Purch Agt: J R Smith  
**MINE**, 21 mi E of Carlsbad, under-  
 gr, potash  
 Supt: J E Tong  
 Foreman: J J Gasparich  
**FLOT MILL**  
 Foreman: I B Phillips  
 (See Text)

**FLORIDA MANGANESE, INC**

Box 951, Deming  
 Pres: E A Howard  
 VP & Gen Mgr: Laurence Hammond  
 Purch Agt: C J Vezzetti  
 Asst Gen Mgr: Joseph Basine  
**MANGANESE VALLEY MINE**, 12  
 mi E of Deming, undergr, Mn  
 Prod: 75 tons  
**150-TON GRAV-MILL**  
 Mill Supt: Chris Muller

**FOLSOM CINDER CO**

3050 S Huron St, Englewood,  
 Colo  
 Gen Supt: A C McMillion  
**SCORIA MINE**, near Antonio in  
 Rio Arriba Co, surface &  
 crusher, Scoria

**FREEPORT SULPHUR CO**

161 E 42nd St, New York 17, NY  
**POTASH DEPOSIT**, near Carlsbad  
 Explor  
 (See La, N Y, Tex)

**GENERAL PUMICE CORP**

Box 1445, Santa Fe  
 Pres: R W Alley  
 VP: Samuel Wein  
 Gen Mgr: R W Alley, Jr  
 Sec: G J Endres  
**CULLUM MINE**, 35 mi N of Santa  
 Fe, surface, pumice  
 Mine Supt: Fred W Bradden  
**300-TON PUMICE MILL**, Santa Fe

**GIANERA, JOE**

General Delivery, Socorro  
**BLACK CANYON MINE**, Socorro  
 Co, Mn  
**MILL**

**GREAT LAKES CARBON CORP**

Box X, Socorro  
 VP, Perlite Div: D L Mariotti  
 Oper Mgr: E A Bar in  
**BLANCA VISTA MINE**, 4 mi W of  
 Socorro, surface, perlite  
 Supt: W D Stone  
 Foreman: Jerry Howell  
**MILL**, Socorro  
 (See Colo, Calif, Nev, N Y, Ore)

**HAILE MINES, INC**

**NEW MEX OPER**  
 Box 27, Hillsboro  
 Pres: H S West  
 VP: W L Long  
 Sec: H S West, Jr  
 Mgr: James I Moore, Jr  
**LAKE VALLEY MINE**, 18 mi S  
 of Hillsboro, undergr & surface, Mn  
 Mine Supt: J Walter Palmer  
 Mine Foreman: H E Miller

Prod: 720 tons

**300-TON HEAV-MED MILL**, Jgs  
 Mill Supt: C F Gommel  
 Assay: Caesar Cobb

**HANOSH MINES, INC**

Grants  
 Pres & Gen Mgr: Geo S Hanosh  
 VP: A M Hanosh  
 Sec: D F Mollica  
 Gen Supt: Louis Chaves  
 Geol: I Rapaport  
 Purch Agt: Geo S Hanosh  
**MINE**, 21 mi NE of Grants, undergr.  
 U  
**300-TON MILL**, Bluewater  
 Mill Supt: Albert Fitch  
 Mill Foreman: Amos Leach

**HAYSTACK MT DEVEL CO, A SUBSID OF SANTA FE RR CO**

88 E Jackson Blvd, Chicago 4,  
 Ill  
 Pres: F G Gurley  
 VP: R G Rydin  
 Sec-Treas: C A Menninger  
 Gen Purch Agt: W W Kelly  
**HAYSTACK MT MINE**, surface, U,  
 V  
 Pres: Ch Mng Eng: T O Evans  
 Sen Mng Eng: E E Zwicky

**HOLLY URANIUM CORP**

Box 66, Grants  
 Gen Mgr: E B Pitts  
 Geol: Paul E Melanson  
 Don E Matheson  
**MESA TOP, ROUNDY, FLAT TOP**  
**MINES**, U<sub>3</sub>O<sub>8</sub>, undergr & surface  
 (See N Y)

**IMPERIAL SULPHUR & ACID CO**

626 1st Nat'l Bank Bldg,  
 Albuquerque  
 VP: Dudley Cornell  
**MINE**, elemental sulphur, etc,  
 Farmington

**INTERNAT'L MIN & CHEM CORP, POTASH DIV**

20 N Wacker Dr, Chicago 6, Ill  
 VP: A N Ingo  
 Gen Mgr: N C White  
**POTASH MINE**, Carlsbad  
 Mgr: C A Arend, Jr  
 Gen Supt: E C Skinner  
 (See Ariz, Colo, Fla, Ill, Mo,  
 Miss, N H, N Y, N Dak, Ohio,  
 S Dak, Tenn, Va)

**ISBELL CONSTR CO**

Box 2351, Reno, Nev  
**CONTRACT MNG**, various parts of  
 New Mex  
 (See Ariz, Calif, Nev, Wash)

**J & J EXPLORATION CO**

Box 824, Silver City  
**MINE**, Tailings, Av, Ag, Cu, Pb,  
 Grant Co

**JACKPOT OIL CO**

Northwest New Mex  
**JACKPOT MINE**, U<sub>3</sub>O<sub>8</sub>

**KELLY MINE LEASE**

Magdalena  
**MINE**, Kelly, Magdalena, undergr.  
 Ag, Pb, Zn  
 Idle  
 (Leased to J D Torres)

**KENNECOTT COPPER CORP, CHINO MINES DIV**

Hurley  
 Gen Mgr: W H Goodrich  
 Asst Gen Mgrs: E A Slover,  
 J K Richardson  
 Purch Agt: H E Cromar  
**CHINO MINES**, Santa Rita, surface  
 & undergr, Cu, Mo, Ag  
 Mine Supt: G J Ballinger  
 Asst Supt: W E Herkimer  
 Mine To smelt: E V Harris  
 Mine Engr: W W Baltoesser  
**FLOT MILL**, Hurley  
 Mill Supt: E A Schrover  
 Foreman: F D Thayer  
 Met Engr: B C Jacobs  
**REVERB SMELTER**, Hurley  
 Supt: W H Wynn  
 Asst Supt: W C Dow  
 (See Ariz, Nev, N Y, Utah)

**KERR-MCGEE OIL INDUS, INC, NAVAJO URANIUM DIV**

Box 606, Shiprock  
 Pres: D A McGee  
 VP: A T F Sells  
 Sec: J H Lollar, Jr

Treas: S B Robinson  
 Purch Agt: C J Colby  
**MINE**, undergr, U<sub>3</sub>O<sub>8</sub>  
 Gen Supt: C E Osborn  
 Asst Gen Supt: M F Bolton  
 Mine Supt: Vernon Willden  
**MILL**  
 Mill Supt: Chas Lindbert  
 Mill Met: Eugene Woodward  
 Chem: Richard Shreve  
 (See Okla, Wyo)

**KIRK'S PERLITE INDUSTRY**

Box 576, Lordsburg  
 Owner: M Kykendall  
**AMBER PEARL MINE**, 12 mi S of  
 Lordsburg, surface, perlite

**LA JARA MNG CO**

Box 388, Grants  
 Partners: N C Ribble  
 Chas H Carder  
 Alvis F Denison  
**CEDAR FL, LA JARA FL**, surface,  
 U<sub>3</sub>O<sub>8</sub>  
 Mgr: A F Denison

**LANDRUM, JOE**

Box 1108, Silver City  
**JOE #2 MINE**, Grant Co, Mn

**LAVA-PUMICE, INC**

Box 387, Albuquerque  
 Pres: Wm E Eichhorst  
 VP: Richard G Otto  
 Gen Mgr: James McCree  
 Sec: E D Otto  
**MINE**, 10 mi W of Pena Blanca,  
 surface, pumice  
 Prod: 150 tons  
**400-TON MILL**, San Domingo

**LUCK MNG & CONST CO**

Box 28, Silver City  
 Gen Supt: J Hutchins  
**BOSTON HILL MINE**, Grant Co,  
 surface, Fe, Mn

**MACDONALD & DOBSON**

Box RR, Magdalena  
 Partners: J A MacDonald  
 W R Dobson  
**MITT MINE**, 3 mi SE of Magdalena,  
 undergr, Zn, Cu, Pb, Ag

**MANOL, OSCAR**

Northwest New Mex  
**MANOL CLAIMS**, U<sub>3</sub>O<sub>8</sub>

**MATHIS & MATHIS**

P O Box 482, Silver City  
**PEARSON PIT**, near Pterro, Fe

**MAYS, W A**

Corona  
**LITTLE WONDER MINE**, 10 mi W  
 of Corona, undergr, Pb, Cu, Ag  
 Under devel

**McELVAIN BROS**

Northwest New Mex  
**RED BLUFF #7 MINE**, U<sub>3</sub>O<sub>8</sub>

**METALS LTD OF MILL CANYON**

Box Y, Magdalena  
 Gen Mgr: Frank L Maher  
 Geol: Seymour Thurmond, Jr  
**MINE**, 12 mi SW of Magdalena,  
 undergr, Au, Ag, Cu, Pb, Zn,  
 rare earth metals  
**15-TON GRAV-FLOT MILL**, Mill  
 Canyon  
 Mill Supt: O L Maher  
 Idle

**MEX-TEX MNG CO, INC**

Box 757, Socorro  
 Pres: J E Bishop  
**ROYAL FLUSH, MALICIT, MEX-  
 TEX MINES**,  
 Bingham

Gen Mgr: Ben B Scott  
**MINES**, undergr, surface, Ba, Pb,  
 fluorapatite

Mine Supt: Maynard Byrd

Mine Engr: Jose T Boca

Prod: 150 tons

**450-TON PULVERIZER**

San Antonio

Mill Supt: Tom Wilkinson

**MIRABAL & BOWLES**

Northwest New Mex

**LOWE PINE CLAIMS**, U<sub>3</sub>O<sub>8</sub>

**MISSOURI URANIUM CORP**

Grants

Pres & Gen Mgr: Ray E Blair

Gen Supt: Peter Ely

Geol: W DeJuar

**RED BLUFF MINE**, surface, U<sub>3</sub>O<sub>8</sub>

Undergr prod

**MOCKING BIRD MNG CO**

204 E 2nd St, Portales  
 Gen Mgr: Paul Ridings  
**MOCKING BIRD MINE**, 18 mi S  
 of Bingham, undergr & surface,  
 Fe, Zn  
 Idle

**MOLYBDENUM CORP OF AMERICA**

Quetta  
 Gen Mgr: A L Oreslin  
 Cons Engr: O R Whitaker  
**MOLY MINE**, 7 mi E of Quetta,  
 undergr, Mo  
 Supt: Jose Varela  
**200-TON FLOT MILL**  
 Supt: Robert Cregel  
 (See Calif, Colo, N Y, Penn)

**NATIONAL POTASH CO**

Carlsbad  
 Pres: Richard C Wells  
 VP, Oper: Thos C Ferguson  
**MINE**, potash

**NEW JERSEY ZINC CO, THE**

160 Front St, New York, N Y  
 Pres: R L McCanna  
 Sec: Walter H Anyon  
 Treas: S Hiker, Jr  
 Purch Agt: W C Donlap  
**EMPIRE ZINC DIV**  
 Gen Supt: F J Malott  
 Gilman, Colo  
**HANOVER MINE**, undergr, surface,  
 Zn, Pb  
 Hanover

Mine Supt: J S Babcock

Asst Supt: C C Seall

Idle

**800-TON FLOT MILL**

(See Colo, N J, N Y, Va, Wisc)

**NEW MEXICO AGGREGATE CO**

146 W Olmos, San Antonio, Tex  
 Pres: R M Shipman  
 VP: Wm K Hall, Jr  
 Sec: J C Shipman  
**TWIN MTS MINE**, Des Moines,  
 surface, Scoria  
 Gen Mgr: J C Carruthers  
 Prod: 50 tons

**NEW MEXICO CONSOL MNG CO (SUBSID OF PERU MNG CO)**

Box 309, Silver City  
**KEARNEY MINE**, 1 mi E of  
 Hanover

**NEW MEXICO COPPER CORP**

Box 58, Carrizosa  
 Pres & Gen Mgr: C E Degner  
 VP: John J Keel  
 Sec: A D King  
 Met: B C Heath  
 Cons Met: Cooper Shapley  
 Mech Engr: C E Degner, Jr  
 Elec Engr: D M Daniels  
 Mine Foreman: G E King  
**CONQUEROR RIO TINTO MINES**, 11  
 mi SW of Corona, Cu, Pb, Ag,  
 CoFe<sub>2</sub>, Mo  
 Mine Foreman: G E King  
**SURPRISE PARK MINES**, 11 mi SE  
 of Carrizosa, undergr, Cu, Ag, Pb,  
 CaFe<sub>2</sub>, Mo  
**FLOT MILL**  
 Mill Foreman: R C Heath

**NEW MEXICO MINES, INC**

Box 1, Box 3, Santa Fe  
 Pres & Mine Supt: R C Little  
 VP: H M Hardin  
 Sec: J D Coggins  
**HOPEWELL GP**, Hopewell, 18 mi  
 W of Tres Piedras, undergr, Au,  
 Ag, Cu, Pb, Zn

**OTTO, EDGAR D & SON**

270 S 2nd St, Albuquerque  
**CONCHITA MINE**, surface &  
 crusher, Scoria

**OZARK-MANONING CO, MNG DIV**

Box 449, Tulsa, Okla  
**WHITE EAGLE MINE**, 3 mi NW  
 of Deming, undergr, CaFe<sub>2</sub>  
 Mine Supt: Edward Powell, Jr  
 Prod: 50 tons  
 (See Colo, Del, Ill, Ohio)

**QUEEN GROUP MINES**

Magdalena  
 Owner: Sadie Papa

**MINE**, Socorro Co, Ag, Cu, Pb

**PERU MINING CO, SUBSID OF ILL ZINC CO**

Box 309, Silver City

Pres: Morris Bloomberg  
VP & Gen Mgr: Joseph H Taylor  
VP: L M Berkey  
Asst Gen Mgr: J W Faust  
Sec: J S Flory  
PEWAWC MINE, 1 mi E of Hanover,  
surface, As, Ag, Cu, Pb, Zn  
Mine Foreman: Wallace Dow  
1,250-TON FLOT MILL, Denning  
Mill Supt: S T McEwen

#### PETACA PLACERS

Petaca  
Pres & Asst Gen Mgr: G J Slater  
VP & Gen Mgr: Ross Martinez  
Safety Engr: L Martinez  
MILLER, MARTINEZ PLACERS,  
2 1/2 mi W of Petaca, columbite,  
tantallite, monazite, ilmenite  
Mine Supt: A Trullio  
Asst Supt: J G Sanchez  
100-TON MILL, Petaca  
Mill Supt: T Martinez

#### PHILIPS DODGE CORP

Tyrone  
DUNRO MY MINE  
Asst: John F Stock  
(See Ariz, N Y, Tex)

#### PIONEER CONSTRUCTION CO

Box 747, Socorro  
SOCORRO MINE, Socorro Co, Mo

#### PORTALES MINING CO

304 E Second St, Portales  
Gen Mgr: Paul Riddings  
Asst Gen Mgr: G G Blank  
MINE, 5 mi S of Bingham, undergr.,  
surface, Pb  
Mine Supt: John Yeat  
450-TON GRAB-MILL, San Antonio

#### POTASH CO OF AMERICA

Box 31, Carlsbad  
Prod: G F Cooper  
VP & Treas: O D Davis  
VP & Res Mgr: R G Haworth  
Research Dir: E W Douglas  
Purch Agt: C E Bothwell  
Ind Rel Supt: R N Blackman, Jr  
MINE, 21 mi NE of Carlsbad,  
undergr., potassium chloride  
Staff Engr: T L Carey  
Asst Res Mgr: R T Chapman  
Plant Engr: R R Dabney  
Safety Engr: R G Billings  
Mine Supt: R R Knill  
Mine Foreman: Neil Juhola  
Mine Engr: E C Jourdan  
FLOT MILL  
Mill Supt: A J Weidig, Jr  
Asst Mill Supt: H N Clark

#### POTTER, BOWMAN & ORONA

Lordsburg  
SUSIE MINE, Hidalgo Co, Cu

#### PUSCO DEVELOPMENT, INC.

Box 1419, Albuquerque

#### RHODES, JAMES A., PUMICE, INC.

P O Box 1067, Santa Fe  
MINE, Rio Arriba Co  
MILL, Santa Fe, Diatomite

#### SABRE URANIUM CORP

Box 1540, Grand Junction, Colo  
EXPLORE, Grants area  
(See Colo, Utah)

#### ST ANTHONY OIL & GAS CO

12036 E Los Nietos Rd, Santa Fe  
Springs, Calif  
URANIUM EXPLORE, Seboyetta  
lease, Grants area

#### SALT SUPPLY CO

104-B, West Fox, Carlsbad  
OY Mgr: E Lyon  
MILL, near Carlsbad, color  
evaporation, salt

#### SANTA FE PUMICE CO, INC.

P O Box 4208, Santa Fe  
Act Mgr: Carl Whittemore  
WHITE EAGLE MINES, Gunga  
Canyon near Tolmie, surface,  
& crusher, Pumice

#### SANTA FE URANIUM CO

632 Judge Bldg, Salt Lake City,  
Utah  
Pres: Harold Bryneman  
VP: Hyrum Schneider  
Sec: A D Morgan  
HAYSTACK BUTTE, McKinley Co,  
surface, U<sub>3</sub>O<sub>8</sub>  
Gen Mgr: Tom Fife  
Asst Mine Supt: Henry Phillips

#### SCHUNDLER & CO, INC.

P E  
504 Railroad St, Joliet, Ill  
Pres: F E Schundler  
VP: J C Kingsburg  
Sec-Treas: L H Sprague  
Gen Supt: Carl Schulz  
NO AGUA MINE, 20 mi S of  
Austinito, Colo in N New Mex,  
surface, perlite  
Mine Supt: M B Nicholson  
Prod: 250 tons  
250-TON MILL, No Agua  
Mill Supt: M B Nicholson  
Mill Foreman: Lon Colter

#### SHANNON MNG CO, SUBSID

OF PERU MNG CO  
Box 309, Silver City  
SHANNON MINE, Gleason

#### SHATTUCK DENN MNG

CORP, FLUORSPAR BR  
Box 1304, Albuquerque  
Gen Mgr: Geo A Warner  
Ch Clerk: William F Casey  
ZUNI MINE, Grants, 25 mi S  
of Grants, undergr. CaF<sub>2</sub>  
LOS LUNAS FLOT MILL  
Prod: 100 tons of concn, 200  
tons acid grade CaF<sub>2</sub>  
(See Ariz, & East)

#### SIERRA MANGANESE MNG

CO  
Box 813, Deming,  
Pres: Oscar Abraham  
VP: Mike Abraham  
Gen Mgr: J R Abraham  
Sec: Fred Phillips  
Gen Supt: Ernest Nichols  
HILLSIDE MANGANESE MINE, 4 mi  
E of Cabello Dam, Cabello, Mo  
LUCKY GREENSPAR MINE, 11 mi  
NW of Deming, undergr. & surface,  
CaF<sub>2</sub>  
Prod: 30 tons

#### SIXTY COPPER PROSPECT

OF  
c/o S S Thurmond, Jr, Box  
163, Magdalena  
"SIXTY" PROSPECT, 10 mi W  
of Magdalena, surface, Cu, Ag  
Idle

#### SKIDMORE MINING CO

Box 236, Grants  
Gen Mgr: T N Skidmore  
LAST CHANCE MINE, 20 mi NW  
of Grants, undergr. U, V  
Mine Foreman: Joe McCormick  
(See Colo)

#### SOUTHWEST POTASH CORP

Box 473, Carlsbad  
Gen Mgr: P H Stewart  
Asst Gen Mgr: W Aubrey Smith  
Pl Engr: Dale L Schrader  
Purch Agt: A H Kunkel  
MINE, 20 mi NE of Carlsbad,  
undergr., potash  
Mine Supt: John Sowers  
Mine Engr: Ira Herbert  
Prod: 3,000 tons  
3,000-TON FLOT MILL  
Mill Supt: Victor Zandon  
Gen Mill Foreman: Leon Small  
Ch Chem: R S Kaplan  
(See N Y)

#### SOUTHWEST SALT CO

Box 88, Carlsbad  
Mgr: Frank Aubrey  
treats tailings from  
potash mines, salt

#### STRAND, E A

700 N Bayard St, Silver City  
IRON KING MINE, Sierra Co, Mo

#### SUPER COBRE MINE

Petaca  
Oper: A F Mercier  
MINE, Grant Co, Cu

#### TAFOYA, FIDEL & DAVID

Magdalena  
JUANITA MINE, Au, Ag, Cu,  
Pb, Zn  
Idle  
(Leased from C C Catron)

#### TELLEZ, ARCADIO M

Box 114, Hanover  
FREELESS MINE, c/o Mrs C B  
Monroe, Silver City, 1/4 mi E  
of Central, undergr. Pb, Zn, Au,  
Ag

#### TORPEDO MINING CO

Organ

Pres: A S Tutney, Jr  
VP: L B Bentley  
Sec: Edwin Mechem  
TORPEDO, MEMPHIS &  
STEPHENSON-BENNETT MINES,  
undergr. Ag, Cu, Pb  
Supt: J H Brown  
Asmry: L B Bentley  
Idle

#### TORRES, J D

Magdalena  
MISTLETOE MINE, Socorro Co,  
Cu, Pb

#### TOWER MINING & MILLING

CO  
Box 242, Truth or Consequences  
ELLS DEPOSIT, Sierra Co  
MILL, Sierra Co, Mo

#### TUCKER, HIDE, DAVENPORT

McKinley Co  
HOGBACK #4 MINE, U<sub>3</sub>O<sub>8</sub>  
Producing

#### TUCO MNG CO

Hachita  
COPPER DICK MINE, 16 mi SW of  
Hachita, Cu

#### TWIN MOUNTAIN ROCK CO

Des Moines  
TWIN MOUNTAIN MINE, 5 mi N  
of Des Moines, Pumice

#### U S GYPSUM CO

300 W Adams St, Chicago 6, Ill  
MINES, New Mexico  
(See Calif, Colo, Ill, Iowa, Mass,  
Mich, Mont, Nev, Okla, Tex, Utah,  
Va, Wash)

#### U S POTASH CO

Carlsbad  
Res Mgr: H H Bruhn  
Asst Res Mgr: E H Miller  
Purch Agt: R D Schenck  
Geol: J P Smith  
MINE & REFINERY, 21 mi E of  
Carlsbad, potash  
Mine Supt: George Heston  
Refin Supt: R H Mills  
(See East)

#### URANIUM CORP OF AMERICA

Box 38, Los Alamos  
Pres: Malcolm I Cole  
VP: R C Bond  
Sec: O Russell Jones  
VICI #1, undergr. U<sub>3</sub>O<sub>8</sub>  
Gen Mgr: H E Cole  
Uranium explora

#### U S S R & M CO

Lessee: Felix T Jaramillo  
Ch of Bd: J G Gonzales  
P O Box 163, Pterro  
ANSON S MINE, Grant Co, Cu

#### VANADIUM CORP OF

AMERICA  
EAST NEW MEXICO MINE,  
San Juan Co, U  
(See Ariz, Colo, N Y, Utah)

#### VOLCALITE MATERIALS CO

P O Box 6173, Station B,  
Albuquerque  
VOLCALITE MINE, near Algodones  
Scoria (crude only)

#### VOLCANIC CINDER CO

P O Box 601, El Paso  
KLINCKER CLAIM, at Adon, surface,  
& crusher, Dona Ana Co, Scoria

#### WHITE & MATHIS

P O Box 453, Silver City,  
GREENLEAF & GREENLEAF #2,  
Deming, Fluorspar

#### WHITE, DOUGLAS B

Box 601, Silver City  
ZUNIGA MINES, W of Pterro,  
surface, Cu  
LEACHING PL  
Mnt: Lewis Ormer

#### WOOD MINING CO

617 Dakota St, S E, Albuquerque  
Pres: Ray C Wood  
BLACK JACK MINE, 3 mi S of  
Truth or Consequences, undergr.  
Mo

## NEW YORK

#### ALLIED CHEM & DYE CORP.

GEN CHEM DIV  
40 Rector St, New York 6  
Pres: M M Riddison  
VP: C M Brown  
Mgr, Mng Oper: R H Dickson  
Asst Mgr, Mng Oper: W J Trepp  
Geol: E J Langley  
Dir, Purchases: F J French  
(See Colo, N Mex, Va)

#### AMERICAN AG CHEM CO,

INC  
50 Church St, New York  
(See Fla)

#### AMERICAN CYANAMID CO

30 Rockefeller Plaza, New York  
(See Ark, Fla, Va)

#### AMERICAN MACH & METALS,

TROUT MNG DIV  
233 Broadway, New York  
Pres: J C Vander Fyl  
VP: C W Anderson  
S-c: A Kenison  
Treas: H T McMeekin  
(See Montana)

#### AMERICAN SMTG & REFIN

CO  
120 Broadway, New York  
Ch of Bd: Roger W Straus  
Pres: K C Brownell  
Ch of Fin Com: J C Emison  
VPs: E I Newhouse, Jr  
R F Goodwin, J D MacKenzie,  
S D Strauss, R D Bradford,  
S H Levison, R W Vaughan,  
A J Phillips

#### Trans: O S Strauss

Sec: G A Brockington  
SMELTING & REF DEPT  
Mgr: Ore Purch Dept: R L Jourdan  
MINING DEPT  
Asst to VP: D J Pope  
Res Engrs: V I Mann, C E Prior  
Ch Geol: L H Hart  
PURCHASING DEPT  
Dir: F H Schiller  
TRAFFIC DEPT  
Mgr: D B Blake  
(See Ariz, Colo, Calif, Ida, Ill,  
Md, Mont, Neb, N J, N Mex,  
Tex, Utah, Wash)

#### ANACONDA COPPER MNG CO

25 Broadway, New York  
Ch of Bd: M C F Kelley  
Pres: R E Dwyer  
VP in Chg of Oper: C E Weed  
Exec VP: E S McGlone  
VP & Gen Counsel: R H Glover  
VP, Mng Oper: R S Newlin  
VP, Met Oper: Frederick Laist  
VPs: E O Sovereign, C H Steele  
Compt: W K Daly  
Sec-Treas: C E Morra  
Ch Geol: V D Perry  
(See Calif, Nev, N Mex, Mont, Ida,  
Utah, Wash)

#### BARTON MINES CORP

N Creek, Warren Co  
Pres: H H Barton  
VP & Mgr: R H Vogel  
Prod Mgr: C R Barton  
Gen Supt: Howard Waldron  
Purch Agt: T Leonard  
GARNET MINE, near North Creek,  
surface  
Mine Supt: S Brown  
Prod: 400 tons  
HMS GRAY-FLOT MILL

#### BUTTE COPPER & ZINC CO

25 Broad St, New York  
Pres: A A Shelare  
VP: M F McDonald  
Sec: J F Cole  
(See Montana)

#### CALLAHAN ZINC LEAD CO

100 Park Ave, New York  
Pres: J T Hall  
VP: B F Mahoney  
Sec-Treas: E A Salo  
(See Alaska, Colo)

#### CAMP BIRD, LTD

70 Pine St, New York  
Chm: F C Haley  
Sec: R B Riley  
(See Calif)

**CARBOLA CHEM CO, INC**

Natural Bridge  
Pres: C J Zimmermann  
Gen Mgr: C J Zimmermann  
Asst Mgr: H T Koenig  
Gen Supt: Phil Blasovic  
Purch Agt: C R Redmond  
CARBOLA MINE, Natural Bridge,  
undergr, limestone  
Mine Foreman: Alfred Loso  
Mine Engr: Phil Blasovic  
Prod: 180 tons  
150-TON FLOT-GRAY MILL  
Mill Supt: Donald Donaghy

**CERTAIN-TEED PROD CORP**

120 E Lancaster Ave,  
Ardmore, Pa  
Pres: Rawson G Lisars  
VPs: P E Fischer, C K Hobson,  
J R Johnston, M Meyer  
Asst VP: A N Craven  
Sec: Arthur O Graves  
Treas: M Hargreaves  
Purch Agt: J I Trolley  
CERTAIN-TEED MINE, Clarence,  
undergr, gypsum  
Gen Mgr: H F Debo  
Asst Gen Mgr: M M Powers  
Mech Engr: R Greenbeck  
Mine Supt: W Luty  
Asst Supt: C Davies  
Prod: 750 tons  
750-TON MILL, Akron  
Mill Supt: J Carpenter  
(See Ida, Mich, Tex, Utah)

**CLIMAX MOLYBDENUM CO**

500 Fifth Ave, New York 36  
Pres: A H Bunker  
VP: W G Thomas  
Sec: I A Cowan  
Treas: Wallace Macgregor  
(See Colo)

**CLIMAX URANIUM CO,**

SUBSID OF CLIMAX  
MOLYBDENUM CO  
500 Fifth Ave, New York 36  
Pres: Frank Coolbaugh, Denver,  
Colo  
Sec: L A Cowan  
Treas: W Macgregor  
(See Colo)

**CLINTON MET PAINT CO**

Clinton  
Pres: Bruce M Bare  
Sec-Treas: Mrs C K Covell  
MINE #3, Clinton, undergr,  
iron oxide  
Gen Supt: Robert Barry

**CONSOL COPPERMINES**

CORP  
120 Broadway, New York 5  
Pres: C D Tripp  
VP: C F Leaman  
Sec-Treas: C L Steegar  
(See Nevada)

**EBRARY GYPSUM CO, INC**

Powers Bldg, Rochester 14  
Pres: Frederick G Ebsary  
VP & Gen Mgr: C M Winslow  
Sec: Mary E McConville  
WHEATLANE MINE, Wheatland  
P O Caledonia, N Y, undergr,  
gypsum  
Mine Supt: Francis Wammond  
Mine Foreman: Earl Scharlau  
MILL & GYPSUM BOARD PL  
Mill Foreman: Mathew Rosney

**EMPIRE STAR MINES CO,**

LTD  
14 Wall St, New York 4  
Pres: J R Mann  
Sec: John E D Grunow  
Treas: Walter P Schmid  
Gen Mgr: W R Fitzpatrick (Calif)  
Purch Agt: Win Carman  
(See Calif)

**FOOD MACH & CHEM CORP**

WESTVACO CHEM DIV  
405 Lexington Ave, New York  
(See Calif, Nev & Wyo)

**FREERPORT SULPHUR CO**

161 E 42nd St, New York 17  
Pres: Langbourne M Williams  
Chmn, Exec Comm: C A Wight  
VPs: B K Shirley, P E Neaman,  
Z W Bartlett, New Orleans,  
La  
J C Carrington, R C Hills,  
R B Johns, R C Petersen,  
New Orleans, La  
T R Vaughan, R C Wells  
(See La, N Mex, Tex)

**GOVERNOUR TALC CO,**

INC  
Box 89, Gouverneur  
Pres: P B Vanderbilt  
VP & Gen Mgr: R S McClellan  
Sec-Treas: F C Gans  
Purch Agt: K J Miles  
VANDERBILT MINE, Balmat,  
undergr, talc  
Asst Mgr: J A Gustin  
Mine Supt: J Bulgar  
Mine Engr: Geo Erdman  
Prod: 350 tons  
300-TON DRY GRIND PL  
Mill Supt: J Hery

**GREAT LAKES CARBON**

CORP  
18 E 48th St, New York  
(See Calif, Colo, Nev, New Mex,  
Ore)

**HOLLY URANIUM CORP**

122 E 42nd St, New York 17  
Pres: S B Harris, Jr  
Sec: I R Chambers  
(See New Mex)

**HOWE SOUND CO**

730 Fifth Ave, New York  
(See Howe, Wash; Calera, Utah  
& Idaho)

**INSPIRATION CONSOL**

COPPER CO  
25 Broadway, New York 4  
Pres: R S Newlin  
Sec-Treas: H M Jacob  
Purch Agt: A B Harris  
(See Arizona)

**INTERNAT'L MIN & CHEM**

CORP  
20 N Wacker Dr, Chicago, Ill  
MINES, various parts of N Y  
(See Ariz, Colo, Fla, Ill, Me,  
Miss, N H, New Mex, N Dak,  
Ohio, S Dak, Tenn, Va)

**INTERNAT'L SALT CO,**

INC  
Weisag  
Pres: E L Fuller  
VP: H M Griffith  
VP: H Osborn  
RETSEF MINE, 4 mi S of Geneseo,  
undergr, rock salt  
Gen Mgr: T F Courthope  
Purch Agt: J A Cooney  
Pl Mgr: S Martin  
Mech Engr: N Goetz  
Elec Engr: D L Moynes  
Prod: 4,000 tons  
MILL

**INTERNAT'L SMLTG &**

REFIN CO,  
A SUBSID OF ANACONDA  
COPPER MING CO  
25 Broadway, New York  
Pres: C F Kelley  
VPs: Frederick List & E O  
Sowerswine  
Sec-Treas: C E Moran  
Compt: W K Daly  
(See Ariz)

**INTERNAT'L TALC CO,**

INC  
Box 258, Gouverneur  
Pres: R H McCarthy  
VP: S W Tuttle  
Gen Mgr: F G Kuehl  
Elec Engr: Glenn Poole  
Purch Agt: A Prosscott Loomis  
WIGHT, FREEMAN & #3 MINES,  
S of Gouverneur, undergr, talc  
Mine Supt: Geo Hurley  
Mine Engr: Roger Miller  
Prod: 400 tons  
400-TON TALC MILL,  
Rattlesbor, N Y  
Mill Supt: C F Dievendorf

**JOHNS-MANVILLE SALES**

CORP  
22 E 40th St, New York 16  
Ch. Bd: L M Cassidy  
Pres: A R Fisher  
VP: Prod: K W Huffine  
Sec: H M Ball  
Treas: R Mackney  
Purch Agt: W J Reynolds  
(See Calif)

**JONES & LAUGHLIN STEEL**

CORP  
NEW YORK ORE DIV  
Star Lake  
BENSON MINES, 32 mi E of  
Conover, surface, Fe  
Mgr: W R Webb  
Asst Mgr: R G Flock

Geol: Fred W St  
Pl Met: R E Durocher  
Ch Mng Engr: Einar Smoby  
Res Engr: Carl Djuvik  
Indus Engr: F D Woodworth, Jr  
Ch Act: A R Eshbach  
Safety Engr: Ray Wagner  
Gen Foreman: Matt: P L Versteeg  
Ch Elec: R F Peterson  
Gen Foreman: Phil W P Bach  
CRUSHING PL & CONC  
Gen Foreman: W A Vichers  
SINTER PLANT  
Gen Foreman: Ralph West  
(See Mich, Minn, Penn)

**KENNECOTT COPPER CORP**

161 E 42nd St, New York 17  
Pres: C R Cook  
VP, Explor: James Boyd (Bear  
Creek Mng Co)  
VP, Legal: R C Klugescheid  
VP, Research: Leslie G Jenness  
VP: Frank R Milliken  
Sec: Robt C Sullivan  
Treas: E S Mann  
Compt: G B Russell  
Dir, Eng: F W Chambers  
Dir, Ind & Pub Rel: A S Cherony  
Gen Purch Agt: R P Lamborn  
Gen Traffic Mgr: R E Taylor  
(See Ariz, Nev, New Mex, Utah)

**MIAMI COPPER CO**

51 Broadway, New York 6  
Pres: E H Westlake  
VP & Treas: John G Greenburgh  
VPs: M A Caine, J H Follitt  
Sec: Henry Kaufman  
(See Arizona)

**MOLYBDENUM CORP OF**

AMERICA  
500 Fifth Ave, New York  
Pres: Mary Hirsch  
Exec VP: Emil A Lucas  
Sec: James S Crawford  
Treas: William B Kuntz  
(See Calif, Colo, New Mex, Penn)

**NAT'L GYPSUM CO**

325 Delaware Ave, Buffalo 2  
Ch. Bd of Dir: N H Baker  
Pres: L B Sanderson  
Exec VP: P A Manake  
VP, Oper: W P Anderson  
Sec: D B Littlewood  
Treas: W S Corrie  
Controller: R H Means  
Dir of Purch: E T Obenchain  
Ch Engr: S D Mainst  
Supervisor, Mines & Quarries:  
R H Sturgess  
Dir, Safety: M C M Pollard  
MINE & PLANT, Clarence Center,  
gypsum  
Pl Mgr: J Proctor  
Mine Supt: L S Liles  
(See Iowa, Kans, Mich, Ohio,  
Penn, Tex, Va)

**NAT'L LEAD CO**

111 Broadway, New York 6  
Pres: J A Martino  
VP: H C Wildner  
Mgr, Mng Dept: Lloyd Wiles  
TITANIUM DIV  
MacINTYRE DEVEL, Tahawus,  
surface, Ti, Fe  
Pl Mgr: P W Allen  
Asst Pl Mgr: John Hall  
Purch Agt: Leon de Polac  
Gen Supt: C R Begor, Jr  
Ch Engr: A J McDonnell  
Mine Supt: Ray Jones  
Met: J H Bissarar  
Maint Supt: John Zollinger  
Purch Agt: Leon de Polac  
Prod: 5,000 tons  
4,500-TON GRAV-FLOT-MAG MILL  
Supt: J J Strohl  
Foreman: W P Jenkins, E Gerout  
Assay: H M Davies  
THREE PAN GREENAWALT  
SINTERING  
Pl Supt: R A Kingman  
Prod: 4,000 tons  
(See Ark, Calif, Kans, Mo, Nev,  
S Dak, Tex)

**NEW JERSEY ZINC CO, THE**

160 Front St, New York 36  
Ch Bd: H Hardenbergh  
Pres: R L McCann  
VP: S S Goodwin  
Mgr, Purch: W C Dunlap  
(See Colo, New Mex, Penn, Va)

**NEW YORK-ALASKA**

GOLD DREDGING CO  
41 Broad St, New York  
(See Alaska, Wash)

**NEWMONT MNG CORP**

14 Wall St, New York 5  
Pres: P Malosomoff  
VPs: Philip Kraft, M D Bingham  
J C Bonetrakis  
Sec: Carroll Searis  
Treas: W T Smith  
Purch Agt: H W Volkman  
See Empire Star Mines, Calif &  
East; Marado & Resurrection,  
Colo; Goldfields Deep Mines, Nev;  
Magma Copper, Ariz)

**PHELPS DODGE CORP**

40 Wall St, New York 5  
Ch of Bd: L S Cates  
Pres: R G Page  
VPs: C E Dodge, G R Drysdale  
J M Hawkins  
Asst VP & Sec: J E Masten  
Compt: J M Hawkins  
Asst Compt: K A Lawrence,  
A F Petersen  
Treas & Asst Sec: M W Urquhart  
Asst Sec-Treas: R D Barnhart  
Asst Sec-Treas: H R Dobbs  
Gen Purch Agt: P G Lee  
Gen Traffic Mgr: J W Lee  
Asst Gen Traffic Mgr: B Ponessa  
(See Ariz, New Mex, Texas)

**PHELPS DODGE REF CORP,**

SUBSID OF PHELPS DODGE  
CORP  
40 Wall St, New York 5  
Pres: W C Bennett  
VPs: C S Harloff, C E Dodge,  
Howard Barkell  
Sec & Counsel: J B Beatty  
Compt: J M Hawkins  
Asst Compt: Raymond Soden  
Treas: M W Urquhart  
Asst Treas: H R Dobbs,  
R D Barnhart  
LAUREL HILL REF & SMLTR,  
Laurel Hill, N Y, Cu, S, Ni,  
Selenium, Tellurium  
Works Mgr: F W Richardson  
(See Texas; Phelps Dodge, Ariz, New  
Mex, East)

**REPUBLIC STEEL CORP**

Republic Bldg, Cleveland, Ohio  
OLD BED, HARMONY & FISHER  
HILL MINES, Mineville, undergr, Fe  
Mgr: W J Linney  
Asst Mgr: F J Myers  
Supts: J R Brennan, J R Murphy  
Engr: W A Blomstran  
Maint Supt: M L Desandorf  
Ch Engr: A K McClellan, Jr  
Prod: 2,000,000 tons per year  
CHATEAUGAY MINE, Lyon Mt,  
undergr & surface, Fe  
Mgr: W J Linney  
Asst Mgr: W G Crusberg  
Supt: Joe Tolosky, Jr  
Ch Engr: F J McManamin  
Maint Supt: Howard Pigg  
Elec: Peter Daniels  
Prod: 1,250,000 tons per year  
CHATEAUGAY MILL, magnetic  
Supt: E R Knox, Jr  
Assay: J M Scott  
Prod: 385,000 tons conc per year  
(See Ala, Mich, Minn, Ohio)

**REYNOLDS TALC CO**

Talcville  
Gen Mgr: Leroy T Brown  
MINE, surface, talc  
MILL

**ST JOSEPH LEAD CO**

250 Park Ave, New York  
Ch of Bd: C H Crane  
Pres: Andrew Fletcher  
VP & Treas: G I Bridgen  
Sec: Robt Bennett  
EDWARDS & BALMAT MINES,  
Balmat, B Lawrence Co, undergr,  
ZnS, PbS, FeS<sub>2</sub>  
(See Mo, Penn)

**SHATTUCK DENN MNG**

CORP  
120 Broadway, New York 5  
Pres: Thomas Bardon  
VP: S S Shattuck  
Asst VPs: E J Higgins, T W Newell  
Sec-Treas: Norman E LaMond  
(See Ariz, Colo, New Mex)

**SOUTHWEST POTASH CORP**

61 Broadway, New York 6  
Pres: T W Childs  
VPs: John Payne, Jr, T G Moore,  
Thomas Capen, Jr, &  
John Vuillequart  
Sec: E A Weil  
(See New Mex)



**TENNESSEE COPPER CO**  
61 Broadway, New York 6  
Pres: E H Westlake  
VP & Gen Mgr: T A Mitchell  
(See Tenn)

**TRI-STATE ZINC CO**  
76 Pine St, New York 5  
Pres: C O Lindberg  
VP & Gen Mgr: M H Loveman  
Sec: J H Nicholls  
Asst Gen Mgr: V C Allen  
(See Ill)

**TUNGSTEN MNG CORP**  
500 9th Ave, New York 18  
Pres: H S West  
Exec VP & Sec: H S West, Jr  
VP: W L Long  
Treas: J F Wilmott  
Purch Agt: G V Boyd  
(See N C)

**U S GYPSUM CO**  
Oakfield  
MINE, undergr, gypsum  
(See Calif, Colo, Ill, Iowa, Mich,  
Mont, Nev, Tex, Utah, Va, Wash)

**U S METALS REF CO**  
(Controlled by Amer Metal Co, Ltd)  
61 Broadway, New York  
Ch of Bd: Walter Hochschild  
Pres: Hugo de Neuville  
Sec: T W Childs  
VP & Gen Mgr: F H Dyke  
Asst Gen Mgr: Douglas Tennant  
Purch Agt: Millard A Merrill  
(See N J)

**U S POTASH CO**  
38 Rockefeller Plaza, New York  
Pres & Gen Mgr: H M Albright  
VP & Gen Counsel: Paul Spear  
VP: Thomas M Cramer  
Sec-Treas: Walter F Dingley  
Asst Sec: Gertrude B Stiehler  
Controller: J H Hadfield  
(See New Mex)

**U S VANADIUM CO**  
DIV UNION CARBIDE & CARBON  
CORP  
30 East 42nd St, New York 17  
Pres: W E Remmers  
VPs: J H Spillane, O F Holmgren,  
A P Cortisyon  
Gen Mgr: H L McKinley  
Gen Supt, Calif: A C Sada  
Gen Supt, Colo: A Q Lundquist  
(See Calif, Colo)

**UNIVERSAL ATLAS CEMENT  
CO**  
109 Park Ave, New York 17  
OPERATIONS, Clarence Center,  
N.Y.  
(See Ohio)

**URANIUM CORP OF COLO**  
121 E 60th St, New York  
Pres: Wm Scott Moore  
VP: Harold B Dow  
Sec-Treas: John G Heins  
(See Colo)

**URANIUM OXIDE PRODUCERS,  
INC**  
11 W 42nd St, New York  
Pres: Joseph Morris  
Sec: Mark Jacobs  
Treas: Matthew Rosenbush

**VANADIUM CORP OF AMER**  
420 Lexington Ave, New York 17  
Pres: W C Kelsey  
VP: G C Floyd  
VP, Mng: D W Viles  
VP & Sec: B O Brand  
Purch Agt: S W Stewart  
Treas: L C Miller  
(See Ariz, Colo, New Mex, Utah)

**VERMONT TALC CO**  
320 E 42nd St, New York

**WARREN FOUNDRY &  
PIPE CORP**  
55 Liberty St, New York 5  
Ch of Bd & Pres: Solomon E  
VP: Fred Gruber  
Sec-Treas: Robt Salomon  
Purch Agt: Fred Djedja  
(See N J)

## NORTH CAROLINA

**APPALACHIAN SULPHIDES,  
INC**  
Ashe Co  
ORE KNOB PROSPECT, undergr,  
Cu

**CAROLINA MIN CO, INC**  
Box 415, Bedford, Va  
PLOT MILLS, Kona & Spruce  
Pine, feldspar  
(See Va)

**CAROLINA PYROPHYLLITE  
CO**  
Greensboro

**OLENDON, STALEY, STEM  
MINES**

**FELDSPAR FLOTATION CO**  
Spruce Pine, N C  
PLOT MILL, feldspar  
(Owned by Pacific Tin Consol)

**FELDSPAR MILLING CO**  
Bowditch, N C  
MILL, Yancey Co, dry grinding,  
feldspar  
(Owned by Pacific Tin Consol)

**FOOTE MIN CO, INC**  
Kings Mt  
Gen Mgr: J E Castle  
Gen Supt: E R Goter  
Geol: T Kessler  
Mech Engr: W Elden  
KINGS MOUNTAIN MINE, 3 mi SE  
of Kings Mt, surface, Li, Sn,  
columbite, beryl, mica, feldspar  
Mine Supt: E R Goter  
MILL

**GLIDDEN COMPANY**  
Lenoir  
MINE, Lenoir, ilmenite  
(See Calif, Md, Ohio)

**HARBINSON-WALKER CO**  
Pittsburg, Pa  
OLIVINE MINE, Addie

**HITCHCOCK CORP**  
Murphy  
TALC MINES

**KINGS MT MICA CO, INC**  
Box 705, Kings Mt  
Pres: James B Preston, Jr  
VP: F B Hendricks  
Sec: Hamilton Douglas, Sr  
Treas: Ray H Gunter  
Gen Mgr: Paul A Lancaster  
Maint Supt: Marvin W Lancaster  
Ch Elec: James E White  
PATTERSON MINE, 2 mi NW of  
Kings Mt, surface, mica  
Mine Supt: Marvin W Lancaster  
400-TON MILL  
Mill Supt: James E White

**LITHIUM CORP OF AMERICA**  
Bessemer City  
MINES, Gaston, Lincoln Co,  
epidote  
PLANT, Bessemer City

**NORTH STATE  
PYROPHYLLITE CO**  
Pittsburg  
SNOW CAMP, HILLSBORO MINES

**SOUTHERN MICA CO OF  
N C, INC**  
Newfield  
MINE, 3 mi W of Spruce Pine,  
surface, mica  
Mine Supt: Geo W Edge  
(See Tenn)

**STANDARD MIN CO**  
Rothschilds  
PYROPHYLLITE MINE

**TUNGSTEN MNG CORP**  
Box 315, Henderson  
Gen Mgr: J R Sweet  
Asst Gen Mgr: B B Bailey  
Ch Engr: A M Synkiewski  
Master Mech: W F Edwards  
Purch Agt: G V Boyd  
HAMME MINE, undergr, WO<sub>3</sub>  
Mine Supt: J C O'Donnell  
Mine Foreman: E H Roberts  
Mine Engr: R M Richmond  
Prod: 300 tons

**800-TON GRAV-PLAT MILL,**  
Tungsten  
Mill Supt: J V Hamme  
Mill Foreman: R Lee Angel  
Assay: S B Adams  
(See N Y)

**YACKIN MICA &  
ILMENITE CO,**  
(Div of the Glidden Co)  
Box 815, Lenoir  
Gen Mgr: H L Rhodes  
MINE, surface, ilmenite  
100-TON GRAV-MILL  
Idle  
(See Glidden, South, Central  
& Calif)

## NORTH DAKOTA

**DAKOTA OIL ENTERPRISES**  
321 11th Ave N E, Jamestown  
URANIUM EXPLOR, near Medora

**MINERAL MNG CO, INC**  
Box 127, Medora  
Gen Mgr: Walter J Ray  
Asst Mgr: Carl B Olsen  
Geol: M Ramsden  
SALVATION MINE, surface, U<sub>3</sub>O<sub>8</sub>  
Mine Supt: P H Ramsden  
Surf prod  
(See Wyo)

**NORTH AMERICAN URANIUM,  
INC**  
321 11th Ave, Jamestown  
Pres: J H Archer  
VP: Orville Christanson  
Sec: John Hjellum  
URANIUM EXPLOR

## OHIO

**BASIC REFRACTORIES, INC**  
845 Hanna Bldg, Cleveland 15  
Pres: H P Ellis, Jr  
Mgr Opr: Max Muller  
Purch Agt: G H Rutherford  
MAPLE GROVE QUARRY & PL,  
Maple Grove, Seneca Co, Ohio,  
surface, dolomite  
Supt: H C Bonnell  
(See Nevada)

**BUTLER BROS**  
1300 Leader Bldg, Cleveland 14  
Ch of Bd: Patrick Butler  
Pres: G W Humphrey  
VPs: H L Pierce, R C Fish  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
(See Minn)

**CELOTEX CORP**  
Port Clinton  
AMERICAN #1 MINE, gypsum  
(See Iowa)

**THE CLEVELAND-CLIFFS  
IRON CO**  
1460 Union Commerce Bldg,  
Cleveland 14  
Ch of Bd: A C Brown  
Pres: W A Sterling  
VP Mng: C W Allen  
Asst VP Mng: Fayette Brown, Jr  
Gen Mgr: G C Holt  
(See Mich, Minn)

**CONSUMERS ORE CO**  
1300 Leader Bldg, Cleveland 14  
Pres: G W Humphrey  
VP: P G Harrison & R C Fish  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
(See Minn)

**DOUGLAS MINING CO**  
1300 Leader Bldg, Cleveland 14  
Ch of Bd: J H Thompson  
Pres: G W Humphrey  
VPs: Perry G Harrison, H L Pierce,  
R C Fish  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
Asst Treas: S L Engel  
(See Minn)

**EAGLE PITCHER CO, THE  
INSUL DIV**  
American Bldg, Cincinnati  
Pres: T S Shore  
VP: Glen J Christner  
Sec: Richard Serviss  
Treas: Carl A Gest  
(See Ariz, Colo, Ill, Kans, Nev,  
Okla, Utah, Wisc)

**GLIDDEN COMPANY,  
CHEMICAL, PIGMENTS &  
METALS DIVISION**  
Union Commerce Bldg, Cleveland  
Gen Sales Mgr: R B Quelos  
(See Calif, Md, N C)

**HANNA, THE M A, CO**  
1300 Leader Bldg, Cleveland 14  
Agent for the following companies:  
Butler Bros, Consumers Ore Co,  
Douglas Mining Co, Hanna Coal &  
Ore Corp, Hanna Iron Ore Co,  
Hanna Ore Mining Co,  
Morton Ore Co, Osark Ore Co,  
Phillips Mining Co, Richmond Iron  
Co, South Agnew Mining Co  
(See Ore)

**HANNA COAL & ORE CORP**  
1300 Leader Bldg, Cleveland 14  
Ch of Bd: J H Thompson  
Pres: G W Humphrey  
VPs: J W Buford, R C Fish,  
J K Gustafson, Perry G  
Harrison, A B Kern,  
H L Pierce  
Sec: L W Spang  
Treas: W C Pieper  
Asst Treas: R E Beal, S I Engel  
Asst Secs: C W Gardner, L E  
McChesney, W C Pieper  
(See Mich, Minn)

**HANNA IRON ORE CO**  
1300 Leader Bldg, Cleveland 14  
Ch of Bd: J H Thompson  
Pres: G W Humphrey  
VPs: Perry G Harrison,  
H L Pierce  
VP & Sec: Paul E Shroads  
Asst Secs: M E Arden, L W Spang  
Asst Sec & Treas: C W Gardner  
Asst Treas: S L Engel, C G  
Tournay  
(See Mich, Minn)

**HANNA ORE MINING CO**  
1300 Leader Bldg, Cleveland 14,  
Ch of Bd: J H Thompson  
Pres: G W Humphrey  
VPs: Perry G Harrison, H L Pierce  
Sec: L W Spang  
Asst Sec & Treas: C W Gardner  
Asst Treas: S L Engel  
(See Minn)

**INTERNAT'L MINERALS  
& CHEM CORP**  
20 N Wacker Dr, Chicago, Ill  
MINES, Bondclay & Lawco, Ohio,  
surface, clay  
Mgr: G D Anderson  
Supt: Bondclay: C Queen  
Supt: Lawco: L Brisker  
MILL, Bondclay, grinding &  
pulverizing  
MILL, Lawco, grinding &  
pulverizing  
(See Ariz, Colo, Fla, Ill, Miss,  
New Mex, S Dak, Tenn, Va)

**MONTREAL MINING CO**  
Hanna Bldg (Box 6508),  
Cleveland 1  
Pres: G G Wade  
VP: Courtney Burton  
Sec: R H Weir  
(See Ogilby, Norton & Co &  
Montreal Mng Co, Minn, Wisc)

**NAT'L GYPSUM CO**  
Lucky  
QUARRY & PLANT, limestone  
PI Mgr: F C Mallory  
Quarry Supt: C W Sexton  
QUARRY & PLANT, Gibsonburg,  
limestone  
PI Mgr: J C Downey  
Quarry Supt: J F Fehlhaber  
(See Iowa, Kans, Mich, Pa, Tex,  
Va)

**OSARK ORE CO,  
SUBSID OF HANNA COAL & ORE CO**  
1300 Leader Bldg, Cleveland 14  
Pres: G W Humphrey  
VPs: R C Fish, P G Harrison,  
H L Pierce  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
Dist Supt: Floyd Lee  
(See Hanna Coal & Ore Co, Mo,  
Ohio)



**PHILBIN MINING CO**  
1300 Leader Bldg, Cleveland 14  
Pres: G W Humphrey  
VPs: P D Block, Jr, R C Fish,  
H L Pierce  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
(See Minn)

**REPUBLIC STEEL CORP**  
25 Prospect Ave N W, Cleveland  
Pres: C M White  
VP: E R Johnson  
Asst VP: E B Wining  
Purch Agt: W T Adams  
(See Mich, Minn, N Y)

**RESERVE MINING CO**  
(Owned by Republic & Armco  
Steel Corp)  
Guildhall Bldg, Cleveland 15  
Pres: W M Kelley  
VP: C L Kingsbury  
Sec: G C Nichols  
Treas & Comp: J Wm Bryant  
Mgr, Oper: R J Linney  
Exec Super, Engr: F M Darnier  
Prep Engr: Oscar Lee  
Dir, Pub Rel: Edward Schmid, Jr  
Dir, Indus Rel: W L Edwards  
Purch Agt: Richard J Woods  
(See Minn)

**RICHMOND IRON CO**  
1300 Leader Bldg, Cleveland 14  
Pres: G W Humphrey  
VPs: C W Beck, P G Harrison,  
H L Pierce  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
(See Mich)

**SOUTH AGNEW MNG CO**  
1300 Leader Bldg, Cleveland 14  
Pres: A F Peterson  
VPs: R C Fish, G W Humphrey,  
H L Pierce  
Sec: L W Spang  
Treas & Asst Sec: C W Gardner  
(See Minn)

**U S STEEL CORP**  
**AMERICAN STEEL & WIRE DIV**  
Rockefeller Bldg, Cleveland 13  
Pres: W F Munford  
VP: V H Leichter  
Gen Mgr: John Graham  
Asst Gen Mgr: M W Millard  
(See Alaska, Ala, Ky, Minn, Mont,  
Pa, Tenn, Utah)

## OKLAHOMA

**AMER SMELT & REFIN CO**  
Sand Springs  
**SAND SPRINGS PLANT**, zinc dust  
(See Ariz, Calif, Colo, Idaho,  
Mont, New Mex, N Y, Utah, Wash)

**AMER ZINC, LEAD & SMELT  
CO**  
Picher  
Dist Mgr: J J Inman  
Gen Supt: O L Green  
Geol: Dan R Stewart  
Mech Eng: W F Netzeband  
Met: R A Ammon  
RIALTO, BARBARA J & LAWYERS  
MINES, undergr, Zn, Pb  
Mine Supt: Bert Huddleston  
3,000-TON GRAV-FLOT MILLS  
Mill Supt: T M Nix

**B & I MNG CO**  
Box 305, Picher

**BECK MINING DIV, INC**  
Box 408, Miami  
Pres & Gen Mgr: G W Beck III  
Sec-Treas: M F Beck  
**BECK #1 GRAV-FLOT MILL**,  
1 1/2 mi E of Picher  
Prod: 1,200 tons, custom

**BIG FOUR MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**BINGHAM MINING CO**  
Box 306, Picher  
Mgr: John Henderson  
MINES, Picher-Cardin, Zn, Pb  
Idle

**BIRTHDAY MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**BISHOP MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**BOB WHITE MINING CO**  
Box 677, Miami  
Idle

**BONNIE MINING CO**  
Box 308, Picher  
MINE, Pb, Zn

**BUFFALO MNG CO**  
Box 241, Picher

**BULL FROG MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**BUNKY K MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**C W & S MILLING CO**  
Box 677, Miami  
**CLEANUP MILL** on Slimes, Pb, Zn  
Idle

**CARDINAL MINING CO**  
Quepaw  
MINES, Picher-Cardin area, Zn, Pb  
Supt: C A Baker  
Idle

**CONNELY & GONCE**  
MINE, Picher, Zn, Pb  
Idle

**CONNOR INVESTMENT CO**  
329 Joplin St, Joplin  
Pres & Gen Mgr: Ralph L Nolan  
VP: M O'Connor  
Sec: G A Wadleigh

**CONTACT MINING CO, INC**  
10 E Central Ave, Miami  
(Box 849)  
Pres: Orville Moore  
VP & Gen Mgr: Finis Bryan  
Sec: V W Sapp  
Treas: G W Sapp  
Asst Mgr: Orville Moore  
**CONTACT MINE (SOUTHSIDE LEASE)**,  
near Cardin, undergr, Zn, Pb  
Prod: 200 tons

**CORONADO MINES INC**  
208 Wright Bldg, Tulsa 3  
Pres: Milton Leon  
VP: S P Bowyer  
Sec-Treas: A F Bourne  
(See Arizona)

**DRYER MINING CO**  
Commerce  
**SOUTH SIDE MINE**, 2 mi E of  
Commerce, Pb, Zn  
Mgr: Jake Dryer  
Idle

**EAGLE Picher CO, THE  
MINING & SMELTING DIV**  
First Nat'l Bank Bldg, Miami  
Pres: T Spender Shore  
VP, Dir & Gen Mgr: O A  
Rockwell  
Compt: G H Walbert  
Dir of Mines: J W Chandler  
Tech Dir: F G McCutcheon  
Dir of Pers: E C Mabon  
Dir of Ins: K E Kimmel  
MINES, Tri-State Area, Zn, Pb  
Office Address: Cardin  
Gen Mgr: H W Harrison  
Gen Supt: S S Clarke  
Mill Supt: Fred Phelps  
**CENTRAL GRAV-FLOT MILL**,  
Cardin, 15,000 tons  
**ZINC SMELTER**, Henryetta  
Mgr: C W Condren  
(See Ariz, Colo, Ill, Nev, N Y,  
Utah)

**FLOSSIE M MNG CO**  
Box 306, Picher

**GRAY MINE & DEVEL CO**  
Cardin  
MINE, Pb, Zn  
Idle

**H & S MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**HARRIS MINING CO, INC**  
**FARMINGTON & LUCKY JENNY  
MINES**, undergr, Zn, Pb  
**960-TON GRAV-FLOT MILL**,  
Hockerville  
Supt: A T Harris  
Asst Supt: Lyndon Smith  
Foreman: Floyd Seat  
(See Kans, Utah)

**HELEN H MNG CO**  
Box 326, Baxter Springs, Kans  
MINES, Picher-Cardin, Okla and  
Baxter Springs, Kans areas,  
undergr, Zn, Pb  
700-TON GRAV-FLOT MILL  
(See Kans)

**L & W MNG CO**  
Box 308, Picher

**MANGAS MINING CO**  
315 1/2 Main St, Joplin  
Pres: Russell B Prince  
VP: Ben R Morris  
Sec: Burnett McCracken  
**DOBSON #7 & #4 MINES**, 2 mi  
E Picher, undergr, Zn, Pb  
Mine Supt: R B Prince  
Mine Foreman: Jack McDowell  
Prod: 120 tons  
Idle

**MID-CENTURY MINING CO**  
Box 306, Picher  
Owner: John Henderson  
**BENDELARI MINE**, Zn, Pb

**OZARK-MAHONING CO,  
MNG DIV**  
Tulsa 1  
Pres: C O Anderson  
VP-Treas: S H Davis  
Sec: R T Lindmark  
Compt: K R McWilliams  
Gen Supt: R K Visco  
Met: R A Sperberg  
Geol: A G Johnston  
Purch Agt: E D Brassel  
(See Colo, Ill, New Mex, N Y)

**ROANOKE MINING CO**  
Box 366, Picher  
Pres & Gen Mgr: O K Tucker  
VP: C W Ingram, Jr  
Sec: W A Brewer  
(See Kans)

**S S & C MINING CO**  
Box 241, Picher  
Idle  
(See Kans)

**ST CLAIR LIME CO**  
Oklahoma City  
MINES, Marble City, undergr,  
surface, high Ca limestone  
Under devel

**SOONER MNG CO, INC**  
Box 385, Picher  
Pres & Gen Mgr: L R Hill  
VP & Mill Supt: John Norman  
Sec-Treas: H O Gray  
**SOONER TAILING MILL**, 1/2 mi  
NE of Picher, 2,000-ton grav-  
flot, Zn, S  
Idle

**TIGER MINING CO**  
Box 366, Picher  
Pres: H D Youngman  
VP: C W Ingram, Jr  
Sec: H E Saunders  
Gen Mgr: O H Burns  
Idle  
(See Kans)

**TONGAHUA MINING CO**  
Box 366, Picher  
Pres: Clarence A Miller  
VP & Gen Mgr: O K Tucker  
Sec: W A Brewer  
**KITTY MINE**, 3 mi W of Picher,  
undergr, Zn, Pb  
Mine Foreman: Leslie L Marcus  
Prod: 150 tons

**TUCK MINING CO**  
First State Bank, Picher  
Pres & Gen Mgr: O K Tucker  
VP: Ralph Chambers  
Sec: Albert Brewer  
**WILSON MINE**, 2 mi SW of Picher,  
undergr, Zn, Pb  
Under devel  
Mine Foreman: Raymond Harper  
Prod: 300 tons

**U S GYPSUM CO**  
Southard  
Works Mgr: L A Pursell  
MINE, surface, gypsum

(See Calif, Colo, Ill, Iowa, Mass,  
Mich, Mont, Nev, New Mex, Tex,  
Utah, Va, Wash)

**UNIVERSAL ATLAS CEMENT  
CO**  
100 Park Ave, New York 17  
**WATONGA MINE**, Blaine Co,  
surface, gypsum  
(See N Y)

**W L B MINING CO**  
Picher  
MINE, Pb, Zn  
Idle

**W M & W MINING CO, INC**  
**BREWSTER-HUTTIG MINE**, 1 1/2  
mi W of Hockerville, undergr, Zn,  
Pb  
Mine Foreman: Jess O Ditson  
Prod: 250 tons  
(See Kans)

**WALTON & SONS**  
Okene  
MINE, surface, gypsum

**WESAH MINING CO**  
Trece  
Owner & Mgr: Tom Kiser  
**WESAH MINE**, 1 mi W Cardin,  
undergr, Pb, Zn  
Prod: 210 tons  
(See Kans)

**WHISKBROOM MNG CO**  
Picher  
MINE, Pb, Zn  
Idle

## OREGON

**AL SARENA MINES, INC**  
Box 122, Trail  
Pres: H P McDonald, Sr  
VP: C C Huxford  
Gen Mgr: H P McDonald, Jr  
Asst Gen Mgr & Elec Engr:  
C R McDonald  
Gen Supt: F H Altland  
**MINE**, 23 mi N of Trail, undergr,  
Au, Ag, Pb, Zn  
Prod: 100-125 tons  
125-TON GRAV-FLOT MILL

**ALCOA MINING CO**  
Box 199, Hillsboro  
**BAUKITE DEPOSITS**, Columbia  
& Washington Co

**ALICE MINE**  
c/o Mrs Liliuth M Turek  
Klamath Falls  
MINE, Sterling Cr dist, Jackson  
Co, Au, Ag

**ASHLAND MINING CO**  
835 N Main St, Ashland  
Mgr: Dewey & Fred Van Curler  
**ASHLAND MINE**, 3 mi NW of  
Ashland, undergr, WO<sub>3</sub>, Cr  
50-TON GRAV MILL  
**MATTER MINE**, 2 mi N of  
Ashland, undergr, WO<sub>3</sub>  
Prod: 5-10 tons

**BADGER GP MINES, INC**  
Susanville (Star Rt, Bates)  
Pres: H E DeChesne  
VP: R V Snyder  
Sec: R M Gilmore  
Agt: M R Mailer  
**STEAMBOAT**, undergr, Au, Ag  
Mine Supt: R V Snyder  
Mine Eng: M R Mailer

**BEAR CREEK DRIFT  
PLACER**  
Bates  
MINE, undergr, placer, Au  
Under devel

**BONANZA OIL & MINE  
CORP**  
Sutherlin  
Pres & Gen Mgr: A L Albee  
Sec: A Miller  
Treas: J H Beck  
Gen Supt: Burt Avery  
Geol: Dr Lloyd Staples  
**BONANZA MINE**, 8 mi E of  
Sutherlin, undergr, Hg  
Mine Supt: Burt Avery  
Mine Foreman: T W Bidwell, Sr  
Prod: 60 tons  
RETORT FURN

**BRISTOL SILICA CO**

Box 548, Rogue River  
Pres: Fayette I Bristol  
BRISTOL MINE, 5 mi E of Rogue  
River, surface, silica  
Mine & Mill Supt: Rolland Jones  
Cons Engr: A O Bartell  
Prod: 100 tons  
MILL, Rogue R, Cap: 100 tons

**BUFFALO MINES**

Granite  
MINES, undergr, Au, Ag, Cu, Pb,  
Zn  
PLOT MILL  
Supt: J F Jackson

**CALAPOOIA & BLUE RIVER**

MILL & MNG CO  
1545 Brook Lane, Corvallis  
Pres: Kenneth O Watkins  
VP: Jessie Rice  
Sec: Aubrey S Tussing  
POORMAN MINE, 7 mi N of Blue  
River, undergr, Au, Pb, Zn  
Under devel

**CANYON CREEK MINING CO**

Prineville  
MINE, Ochoco Mountains, 20 mi  
from Prineville, Hg  
Under devel

**CORDERO MINING CO**

131 University Ave, Palo Alto  
California  
Gen Mgr: J Eldon Gilbert  
HORSE HEAVEN MINE, Ashwood,  
46 mi E of Madras, undergr, Hg  
Gen Supt: Verne Haas  
Mine Supt: F E Lewis  
Gen Foreman: C J McClain  
Prod: 35 tons  
ROAST MILL  
(See Calif, Nevada)

**CURRENT CREEK MNG CO**

124 W 2nd St, Prineville  
VP: A D Amundson  
QUEEN OF OREGON MINE, 7 mi  
E of Ashwood, Pb  
Gen Mgr: Mike Draglich  
Under devel

**DANT & RUSSELL, INC**

Dantore Div, Box 150, Maupin  
Pres: T E Dant  
LADY PHAEOIS MINE, 13 mi S  
of Maupin, surface, volcanic  
glass

**D-JANVIER, GLENN**

Rt 1, Box 337, Gold Hill  
MINE, 8 mi W of Gold Hill,  
surface & placer, hydraulic, Au,  
Ag  
HARD LUCK, DOGGER, SQUIRREL  
MINES, undergr, Au, Ag, Cu, Pb  
Under devel  
PROSPECTOR STAMP MILL

**DYKE, J S**

1719 Washington St, Baker  
CAROL JEAN PLACER, 37 mi  
W of Baker, Au, siron  
Under devel  
MOUNTAINBELLE-AMAZON GP,  
undergr, Au, Ag  
Idle  
CLAIMS, Cracher Cr dist, quartz

**EAST EAGLE MNG CO**

Box 598, Baker  
Pres: G R Underman  
Sec-Treas: Lally Chadwell  
Gen Mgr: Raleigh Chadwell  
Supt: Robert Chadwell  
EAST EAGLE MINE, 42 mi NE  
of Baker, undergr, Au, Cu, Ag  
50-TON GRAV-FLOT MILL

**GRAVES CREEK MINE**

Gold Hill  
Opr: Duane M Munday  
MINE, Graves Cr dist, Josephine  
Co, Au, Ag

**GREAT LAKES CARBON**

CORP, DICALITE DIV  
Trenton  
PLANT #1, surface, diatomaceous  
earth  
Supt: J A Carr  
(See Calif, Colo, Nev, New Mex,  
& East)

**GREENHORN MTN DEVEL**

CO  
Box 908, Baker  
Pres: H C Loft  
VP: B Blanks  
Gen Mgr: Ward L Hill  
PYX MINE, undergr, Au, Ag

Mine Supt: Glen Ingle  
Mine Eng: A N Woodwell  
25-TON FLOT-GRAY MILL  
Mill Supt: Frank Bonnell  
Aest Mill Supt: Vestus Tiller

**HANNA COAL & ORE CORP,**

ORE DIV, SUBSID M A  
HANNA CO

Kibbie  
NICKEL MTN MINE, surface  
Gen Mgr: E S Mollard  
Geol: W A Foster  
Mine Supt: R W Whitney, Jr  
Mine Foreman: H E Servant  
Mine Engr: E J Maney  
(See Mich, Ohio)

**HANNA NICKEL SMELTING**

CO, SUBSID HANNA COAL  
& ORE CORP  
Biddle  
Gen Mgr: E S Mollard  
ELEC MELT PLANT  
Pl Mgr: E E Coleman  
Supt: L E Rosser

**HELENA MINES, INC**

1555 Brooks Lane, Corvallis  
Pres: Wm E Caldwell  
VP: N M Lassen  
Gen Mgr: K O Watkins  
Sec: H E L Barton  
HELENA, OREGON-COLO-  
& LEAD CRYSTAL MINES, 14-19 mi  
SE of Disston, undergr, Au, Zn,  
Pb, Cu, Ag  
Idle

**HI-POTENTIAL MINES**

Main & River Sts, Cottage  
Grove  
Owner: Ray E Nelson  
UTOMAN, SWEETSTAKES &  
HIAWATHA GROUPS, 34 mi SE  
of Cottage Grove, undergr, Au,  
Ag, Cu, Pb, Zn  
Under devel  
5-TON AMAL MILL, Bohemia

**HOLMAN, J R, WONDER**

MINE  
1455 E Orange Grove Ave,  
Pasadena 7, California  
Ptnrs: W B Freeman, LaVern  
Twombly  
WONDER MINE, 20 mi N of  
Selma, surface, Cr, Au  
Under devel  
50-TON GRAV MILL  
(See Calif)

**JUMP-OFF-JOE MINES**

Box 434, Grants Pass  
Owner: Frank Heath  
MINE, 21 mi N of Grants Pass,  
placer, Au  
25-TON AMAL CONCN

**KENAMETAL, INC**

Latrobe, Pa  
MINE, Glass Buttes, Hg  
Under devel

**LEWIS PLACER**

Galice  
Opr: Bud Lewis  
ROCKY GULCH PLACER, 14  
mi N of Merlin, placer, Au  
Prod: 100-500 yds

**MCCALEB CHROME MINE**

Box 26, Selma  
Pres: R E McCaleb  
MINE, Cr  
Foreman: Jack Kelly

**NOODAY COPPER MINE**

514 NW Second St, Grants  
Pass  
Gen Mgr: Earle N Young  
MINE, 32 mi E of Powers,  
undergr, Cu, Au, Ag  
Mine Foreman: Russell Taylor

**OREGON CHROME MINES,**

INC  
Box 473, Grants Pass  
MINE, Oak Flats, 15 mi NW of  
Selma, undergr, Cr  
Lessee: William S Robertson

**PAGE BROS**

291 E 8th St, Prineville  
Geol: Frank E Lewis  
STRICKLAND BUTTE, 20 mi NE  
of Prineville, undergr, Hg  
Under devel

**PIERCE, WESLEY & EARL**

& BRUNSWICK, (MRS)  
10040 Clarey Ave, Grants Pass  
LEIPOLD PLACER, 2 1/2 mi  
from Galice, Au

**HARRY SORDY PLACER, Galice,**

Au

Under devel

**QUICKSILVER SYNDICATE**

BlackButte  
Pres: Frank Taylor  
VP: D J Mills  
Gen Mgr: F L Mills  
BLACKBUTTE MINE, 17 mi S  
of Cottage Grove, Hg  
Idle

**RAND, LANGDON**

Baker  
Pres: Irving Rand  
JOHNNIE & CATHERINE CLAIMS,  
Sb, Au, W  
30 CLAIMS at Homestead, ad-  
joining Iron Dyke Mine, Co, Ag,  
Au

**RASMUSSEN, C A**

Granite  
LODE PLACER, 9 mi S of  
Granite, Au, Ag  
Under devel

**SIX MILE CHROMITE CO**

Box 12, Selma  
Gen Mgr: Jean W Pressler  
MINE, Cr  
50-TON CUSTOM MILL, 8 mi NW  
of Selma on Six Mile Cr

**SHAVELY, ORVILLE N**

Rt 2, Box 35, Jacksonville  
OLD FEDERAL MINE, Upper  
Applegate dist, Jackson Co, Au,  
Ag

**SOURDOUGH CHROME MINE**

409 NE Flint St, Grants Pass  
Pres: Fay I Bristol  
MINE, 32 mi W of O'Brien, under-  
gr, Cr  
Lessor: H Beasley  
Gen Mgr: Ben Baker  
Gen Supt: Rvy Paul  
50-TON MILL

**TAR BABY MINING CO**

529 Newhouse Bldg, Salt Lake  
City, Utah  
Pres: W E Caldwell  
VP & Mgr: K O Watkins  
Sec-Treas: B M Slusser  
MUSICK MINE, 16 mi SE of  
Disston, undergr, Au, Cu, Ag,  
Pb, Zn  
Under devel

**THOMPSON & COX**

Box 672, Grants Pass  
CHROME KING MINE, Cr  
Gen Mgr: Edward Cox

**TRICKEL ELECTRIC**

SERVICE  
2019 Third St, Baker  
Owner: C J Trickle  
FRIDAY, BULL RUN, HOWARD  
CHROME & MULTIMETALS  
MINES, Baker Co, undergr, &  
surface, Cr, Bs, Cu, Au,  
diatomite  
Idle  
50-TON GRAV-CYAN MILL, 10  
mi E of Baker

**TULARE, GEORGE**

Rt 2, Box 371, Gold Hill  
SYLVANITE MINE, 3 mi E of  
Gold Hill, undergr, Au  
CORPRAL G MINE, 6 mi N of  
Gold Hill, undergr, Au  
Idle

**UDELL & WATKINS**

1565 Brook Lane, Corvallis  
YANKEE GIRL MINE & GRUB-  
STAKE MINES, 6 mi N of Blue  
River, undergr, Au  
Idle  
PROFESSOR MINE, 16 mi SE  
of Disston, undergr, Cu, Pb,  
Zn  
Idle  
BIG ROCK MINE, 19 mi SE of  
Disston, Au

**VAD-ORES EXPLOR CO**

633 Med Arts Bldg, Portland  
Pres: Y E Rudy  
Sec-Treas: T R Fyock

**VICTORY MINE**

Glen Dale  
Opr: Leo D Baker  
MINE, Green Mountain dist,  
Douglas Co, Au

**WATERMAN PLACER**

MINES  
Mitchell

Gen Mgr: E Q Waterman  
Asst Gen Mgr: Gilbert Waterman  
Sec: Ralph Waterman  
SPANISH GULCH PLACER, 25 mi  
E of Mitchell, placer, Au, Pt,  
monazite sand  
ROCK RIFFLE PLACER, 25 mi  
E of Mitchell, placer, Au, Pt,  
monazite sand  
Under devel  
HYDRAUL MILL

**WATKINS, KENNETH O**

1565 Brook Lane, Corvallis  
WARRNER MINE, Pb, Zn  
SUNSET MINE, Au, Cu, Pb, Zn  
LEROY MINE, Cu, Pb, Zn  
LEHMEN MINE, ANNE TRAIL  
GROUP MINES, undergr  
Assessment work only

**PENNSYLVANIA**

**ALAN WOOD STEEL CO**

Conshohocken  
Pres: J T Whiting  
VP: C E Davis  
Sec-Treas: C L Jones  
Met: I A Mohr  
Ch Engr: P C Schoen  
Safety Engr: C D Dorough  
Purch Agt: Clinton Bishop  
(See N J)

**ALCOA, MNG DIV**

1501 Alcoa Bldg, Pittsburgh 19  
Pres: I W Wilson  
Sec: Alfred M Hunt  
Treas: Gordon Cameron  
Purch Agt: Ralph Keefer  
Gen Mgr in Ch: Lawrence  
(Litchfield, Jr  
(See ID, Ore)

**BETHLEHEM CORNWALL**

CORP  
701 E Third St, Bethlehem  
Pres: A F Peterson  
Mgr: S J Shale  
CORNWALL MINE, Cornwall, Fe,  
Cu, Au, Ag, S  
6,000-TON MAG CONCN  
2,500-TON FLOT PL  
2,000-TON SINTERING PL  
GRACE MINE, Morgantown, Fe,  
S  
MAG CONCN, FLOT PL, pelletizing  
plant

**CERTAIN-TEED PRODUCTS**

CORP  
Box 5503, Philadelphia  
Pres: R G Litzare  
VP: P E Fischer  
Sec: A O Graves  
Treas: Mellor Hargreaves  
Purch Agt: J I Trolley  
(See Mich)

**CLIMAX MOLYBDENUM CO**

Langloeth  
Refinery  
Supt: J H White, Jr  
Asst Supt: E S Wheeler  
Prod: 2,000,000 lbs MoS<sub>2</sub> per mo  
(See Colo, N Y)

**COPPER HILL MNG CORP**

1105 Standard Life Bldg,  
Pittsburgh  
Pres: John Owen  
VP: Gabriel G Rubin  
(See Idaho)

**COPPER RANGE CO,**

C G HUSSEY DIV  
2850 2nd Ave, Pittsburgh 13  
VP & Div Mgr: J P Lally  
VPs: R W Myers, J V O'Connell  
Sales: E H Seiling  
Purch Agt: J G McNeely  
MILL, Pittsburgh  
Mill Supt: C E Pearl  
Mast Mech: Andrew Herpack  
Elec Engr: C N Wilson  
(See Mass)

**FOOTE MINERAL CO**

18 W Chelten Ave, Philadelphia, 44  
Pres: G H Chambers  
VP: F B Shay  
Sec: E G Enck  
Gen Mgr: J E Castle  
Geol: T Kessler  
Purch Agt: S Morrison  
(See N C)

**JONES & LAUGHLIN STEEL CORP**

401 Liberty Ave., Pittsburgh  
Gen Mgr., Ore Mines: C C Henning  
(See N Y)

**MOLYBDENUM CORP OF AMERICA**

Washington  
Wks Mgr: Eugene F Lucas  
PLANT, Mo, WO<sub>3</sub> and Ba alloys  
rare metals  
PLANT, at York, Mo, WO<sub>3</sub>, rare  
earths  
(See Calif, Colo, New Mex, N Y)

**NAT'L GYPSUM CO**

York  
QUARRY & PL. lime  
Pl Mgr: W W Wallace  
Quarry Supt: C E Tesnow  
MINE, near Bellefonte, limestone  
Pl Mgr: H E Gustafson  
Mine Supt: J R Carlson  
(See Iowa, Kans, Mich, N Y, Ohio,  
Tex, Va)

**POROCCEL CORP**

210 W Washington St.,  
Philadelphia 5  
Pres: Wright W Gary  
VP: R H Hubbell, Jr  
Sec: W E Sawyer, Jr  
Treas: C W Nielsen  
Dir, Prod: T L Falknor  
(See Ark)

**ST JOSEPH LEAD**

250 Park Avenue, New York  
ELECTROTHERMIC  
Josephston  
Prod: 90,000 tons Zn per year  
30,000 tons ZnO per year  
(See Mo, N Y)

**SNYDER MINING CO**

812 Oliver Bldg., Pittsburgh  
Pres: W P Snyder, Jr  
VP: H M Wilson  
Asst to Pres: A L Fairley, Jr  
Sec: L B Perrin  
Treas: J K Foster  
(See Minn)

**U S STEEL CORP**

325 William Penn Place,  
Pittsburgh 30  
Ch of Bd of Dir: B F Fairless  
Vice Ch of Bd of Dir: R M Blough  
Ch of Fin Comm: E M Voorhees  
Vice Ch of Fin Comm & Compt.  
R C Tyson

Pres: C F Hood  
Gen Counsel: R M Blough  
Exec VP-Com: D F Austin  
Exec VP-Oper: H B Jordan  
Exec VP-Engr & Raw Mat:  
M W Reed  
Exec VP-Acctg: G W Rooney  
Sec: B L Rawlins  
Treas: H E Isham  
(See Alaska, Ala, Ky, Mich, Minn,  
Mont, Tenn, Utah)

**U S STEEL CORP. AMERICAN STEEL & WIRE DIV**

Donora  
DONORA ZINC WORKS  
(See Alaska, Ala, Ky, Mich, Minn,  
Mont, Ohio, Tenn, Utah)

**WARNER COMPANY**

Bellefonte  
Pres: John Curtin, Jr  
VP: J H Whitten  
Gen Supt: Fred Warner  
Ch Engr: A C Hewitt  
Purch Agt: H C Taylor  
BELL MINE, Bellefonte, undergr,  
limestone  
Mine Supt: H A Corre  
Prod: 2,400 tons

**RHODE ISLAND****GRAPHITE MINES, INC**

Box 92, Auburn Station  
Cranston  
Treas: P T Kalne  
OPERATIONS, Providence Co,  
graphite

**SOUTH CAROLINA****COMMERCEALORES, INC**

Box 156, Clover  
Pres & Gen Mgr: A R Eckel  
VP: H S Doty  
VP & Gen Supt: S J Beers  
Sec: R E Metz  
Purch Agt: H I Wright  
HENRY KNOB MINE, 4 mi W of  
Clover, surface, kyanite  
Mine Foreman: Len Hardin  
Prod: 500 tons  
500-TON FLOT MILL  
Mill Foreman: Richard Lochmund,  
B S Bonstrake

**HUBER, J M CORP, CLAY DIV**

Langley  
Pres: H W Huber  
Exec VP: R B Takewell  
VP, Clay Div: W J Driver  
MINE, Langley, surface, clay  
Mgr: C H Marvin, Jr  
MINE, Huber, Ga, surface, clay  
Mgr: P L Courtney  
PL, Graniteville, S Carolina  
(See N Y)

**INDUSTRIAL MINERALS, INC**

York  
Pres & Gen Mgr: L G Wilson  
VP & Sec: W F Wilson  
KINGS CR MINE, 14 mi W of York,  
surface, barite  
Prod: 15 tons  
KINGS CR MILL, 45-ton, crush  
& grind

**ZONOLITE COMPANY**

Travelers Rest  
STRIP MINE, surface,  
vermiculite  
Mgr: J A Kelley  
(See Ill, Mont)

**SOUTH DAKOTA****AMERICAN COLLOID CO**

Belle Fourche  
BELLE MINE, surface, bentonite  
Supt: Claud Acard  
Prod: 600 tons  
(See Ill, Miss, Wyo)

**BALD MTN MINING CO**

Trojan  
Pres: O D Collis  
Treas: W H Reidesel  
Mgr: Herbert D Pine  
Asst Mgr & Geol: P A Miller  
Mech Engr: M Woods  
MINES, undergr, Au, Ag  
Mine Supt: J Lauritsen  
Mine Engr: G Kiley  
Prod: 350 tons  
350-TON CYAN MILL  
Mill Supt: B Olson  
Assayer: W Harris

**BELLE ELDRIDGE GOLD MINES**

Box 437, Deadwood  
Pres: Alfred Haug  
Gen Mgr: Carl Johnson  
Sec-Treas: Ove E Ellefson  
BELLE ELDRIDGE GOLD MINES,  
Au, Ag, Pb, Zn  
100-TON FLOT MILL  
Under devel

**BLACK HILLS KEYSTONE CORP**

Keystone  
Pres: W K Wallace  
INGERSOL MINE, Beryl,  
lepidolite, mica, tantalite,  
feldspar  
50-TON FLOT MILL  
Mgr: A I Johnson

**BLACK HILLS TIN CO**

332 S Michigan Ave, Chicago  
Pres: Ross J Beatty, Jr  
VP: John T Beatty  
Sec: B A Brodsky  
MINE, Tinton, surface, spodumene,  
tantalite  
Prod: 80 tons

**COMMONWEALTH MNG CO**

OF S D  
Box 892, Sioux Falls  
Pres: Merle M Johnson  
VP: John C Nott  
Sec-Treas: Oscar Shakstad  
COMMONWEALTH MINE, undergr,  
surface, U<sub>3</sub>O<sub>8</sub>, Au, Ag  
Deadwood

Gen Mgr: Martin Broseman  
Genl-Mgr: Alex McHugh  
Under devel  
(See Utah)

**DAKOTA TIN & GOLD CO**

Spearfish  
MINE, pegmatite minerals

**EDGEMONT MNG CO, INC**

Edgemont  
Oper: A Ludwig & E J Brockman  
LUNDBURG MINE, U<sub>3</sub>O<sub>8</sub>  
Producing  
VIRGINIA C MINE, undergr, U<sub>3</sub>O<sub>8</sub>  
Under devel  
GOULD LEASE, undergr, U<sub>3</sub>O<sub>8</sub>  
Producing  
TAYLOR MINE, surface, U<sub>3</sub>O<sub>8</sub>  
Under devel  
CRANDALL MINE, surface, U<sub>3</sub>O<sub>8</sub>  
Under devel  
PILSNER MINE, surface, U<sub>3</sub>O<sub>8</sub>  
Producing  
HAMILTON MINE  
Idle  
(See Wyo)

**FLUORSAPAR DEVEL CO**

Deadwood  
Mgr: George W Wolf  
MINE, Lawrence Co, CaF<sub>2</sub>

**FRERICHS MINING CO**

Box 352, Deadwood  
Pres & Gen Mgr: D A Frerichs  
Sec-Treas: F J Parker  
FRERICHS MINE, 1-1/2 mi SW  
of Deadwood, Au, Ag  
Under devel

**HOLY TERROR MNG CO**

Keystone  
Sec: George Flavin  
Gen Supt: A I Johnson  
HOLY TERROR MINE, undergr  
& surface, spodumene, beryl,  
mica, columbite  
Lessor: Uranium & Allied  
Minerals, Inc, Rapid City

**HOMESTAKE MINING CO**

Lead  
HOMESTAKE MINE, undergr, Au  
Gen Mgr: Abbott H Shoemaker  
Adm Asst to Gen Mgr: L W Sweet  
Mine Supt: C N Kravag  
Asst Mine Supt: W C Campbell  
Ch Met: C E Schmidt  
Geol: James O Harder  
Ch Elec Engr: C L Gust  
Ch Mech Engr: LeRoy Seyfers  
Safety Engr: Phil Graves  
Ch Counsel: Kenneth C Kellar  
Purch Agt: F E Bryan  
4,000-TON CYAN MILL  
YATES COMPRESSION PL, ROSS  
CRUSHER PL, SOUTH MILL &  
CYAN SAND PLS #1 & 3, lead  
(See Calif, Utah, Wyo)

**INTERNAT'L MIN & CHEM CORP. EASTERN CLAY PROD DIV**

Box 451, Belle Fourche  
Mgr: K L Arthur  
MINE, 30 mi W of Belle Fourche,  
surface, bentonite  
Prod: 1,000 tons  
500-TON MILL  
COSY FELDSPAR DIV MINE &  
MILL, Keystone feldspar  
Supt: J W Mitchell  
MINE, Custer, feldspar  
80-TON GRINDING MILL  
Supt: B H Brigham  
(See Ariz, Colo, Fla, Ill, Miss,  
New Mex, N Dak, Ohio, S Dak,  
Tenn, Va)

**LITHIUM CORP OF AMERICA, INC**

Rand Tower, Minneapolis 2, Minn  
Pres: H W Rogers  
MINES, near Hill City,  
Custer  
(See N C)

**LIVINGSTON URANIUM CORP**

Edgemont  
URANIUM MINES, near Edgemont

**MAYWOOD CHEM WORKS**

Bunker Ave, Maywood, N J  
ETTA MINE, Keystone, spodumene  
Mgr: Dewey Peterson

**McLEOD MNG CO**

Box 1301, Huron  
Pres & Gen Mgr: James A Boocock  
VP: A R Barnes, John McLeod  
Sec-Treas: E G Youngs  
Dir: Pat H Feehey, W R Cassidy,  
Lloyd E Garnick

**FREEZE-OUT #1, U<sub>3</sub>O<sub>8</sub>, V**

Mine Supt: John McLeod  
Mine Foreman: Pete Cassidy  
Producing

**MICHAUD & STRATTON**

Custer  
HORSESHOE LODGE MINE,  
pegmatite minerals

**MID-CONTINENT EXPLOR CO**

MINE, Black Hills, rare earths,  
Mn, CaF<sub>2</sub>, WO<sub>3</sub> & others  
(See Wyo)

**MINERALS MILLS, INC**

Custer  
Pres: Albert Gushurst  
Sec & Gen Mgr: A I Johnson  
OLD MIKE & GLENDON MINES,  
4 mi NW of Custer, undergr, sur-  
face, mica, beryl, feldspar,  
tantalite  
Prod: 100 tons  
Under devel  
100-TON CRUSHING & SCREENING  
PL, at Old Mike Mine

**PENDLETON, JACK, JR**

Box 116, Keystone  
MINE, 6 mi E of Keystone,  
pegmatite minerals  
VOLCANIC URANIUM MINE,  
surface, U<sub>3</sub>O<sub>8</sub>  
Under devel

**ROSEBERRY, CARL**

Custer  
TOPSITE MINE, 3-1/2 mi SE  
of Custer, pegmatite minerals  
HUB MINE, 4 mi SE of Custer,  
pegmatite minerals

**ROSEBERRY, JOHN**

Custer  
PARK MINE, 4-1/2 mi N of  
Custer, pegmatite minerals  
MEEKER MINE, 10 mi NE of  
Custer, pegmatite minerals  
TRIANGLE MINE, 5 mi SE of  
Custer, pegmatite minerals

**ROSS, JOHN**

Custer  
HIGHLAND LODGE MINE,  
pegmatite minerals

**SAGDALENE, BALDWIN**

Keystone  
PINE CR LODGE & WHITECAP  
MINE, near Keystone, pegmatite  
minerals

**SCOTT'S ROSE QUARTZ CO**

Custer  
Mgr: Frank S Scott  
RED ROSE & MOUNTAIN ROSE  
MINES, near Custer, pegmatite  
minerals

**SHINDELBOWER, HENRY**

Custer  
WINTER WAYSIDE MINE, 5 mi  
E of Custer, pegmatite minerals

**SODAK URANIUM & MNG CO, INC**

Box 330, Edgemont  
Pres: Clyde R Boyle  
VP: Wm E Haldape  
Sec-Treas: Paul H Russell  
JOE SMITH GP, HIP SNORTHER  
GP, Fall River & Butte Co,  
surface, U<sub>3</sub>O<sub>8</sub>, V  
Mine Supt: Keith W Duncan  
Drill Foreman: Harold Duncan  
Producing  
(See Wyo)

**SOLOM, B L**

Custer  
MINE, VICTORY #1, 5 mi NE of  
Custer, pegmatite minerals

**SOUTHERN HILLS MINES, INC**

Keystone  
Pres: Elmer Edwards  
Mgr: A I Johnson  
JUNIPER MINE, Keystone, undergr,  
Au, Ag  
MILL

**TRADE DOLLAR MNG CO**

Box 646, Edgemont  
Pres: Joseph B Smith  
VP: John E Challinor  
Sec: Harold R Lundberg, Jr  
TRADO DOLLAR GP, 19 mi E of  
Edgemont, undergr, surface,  
U<sub>3</sub>O<sub>8</sub>, V  
Producing

**URANIUM & ALLIED MIN, INC**

(See Holy Terror Mag Co)

# WEINE, CARL

Custer  
MINE, pegmatite minerals

# WELLS, GLADYS

Custer  
MINE, pegmatite minerals

# WOOD, ERNEST

Box 2, Keystone  
ANNA LODE, GLENDALE #1, #2,  
#3 & #4 & CRACKER JACK, 7 mi  
SE of Keystone, undergr. pegmatite  
minerals  
Under devel

# ZIOLKOWSKI, KORCEAK

Custer  
CRAZY HORSE & PROZEN FOOT  
MINE, Custer Co, pegmatite  
minerals

## TENNESSEE

### AMER ZINC CO OF TENN, SUBSID OF AMER ZINC, LEAD & SMELT CO

Mascot  
VP: N A Coy  
Purch Agt: C C Sisk  
Mgt: Tom Black  
Supt: Milton M J Langley  
Ch Engr: W N Johnson  
Ch Geol: Chas R L Oder  
Mech & Elect Supt: I C Mitchell  
Personnel Dir: P M Arthur  
Safety Engr: Harold Thompson  
Mine Supts: J L Kellogg, Harry  
Miller

Mine Foreman: F E Thurman  
MASCOT #2 MINE, undergr,  
zinc sulphide con  
YOUNG, COY MINES  
Under devel

JARNAGIN MINES, Jefferson City  
Idle

NORTH FRIENDS STATION MINE,  
Hodges

ATHLETIC MINE, Jefferson City  
GRASSELL, New Market

Idle  
4,000-TON PLOT-GRAV MILL,  
HMS, JIGS

Mascot  
Mill Supt: D B Grove  
Asst Mill Supt: Jim Polhemus  
Mill Foreman: W L Whitaker  
Ch Chem: D E Chadwick  
(See Amer Zinc-III, III, Tex)

Amer Zinc, Lead & Smelt, Mo,  
Okla, Wash

### APPALACHIAN MNG & SMELTING CORP

Embsville  
Pres: G R Warren  
MINE, Pb, Zn

### ARMOUR FERTILIZER WORKS

Columbia  
Supt: W B King

### PHOSPHATE MINE (See Fla)

### COLUMBIA ROCK PROD CORP

Pressnell Bldg, Columbia  
Pres: Wayne Pressnell  
VP: Harry Pressnell  
Sec-Treas: Wm C Fraser  
Purch Agt: W J Davis  
MINE, undergr, Amestown  
Gen Mgr: Carl Ashton  
Prod: 2,000 tons  
2,000-TON MILL,  
Columbia

### CONSOL HIGH GRADE ORE CO

Box 522, Cleveland  
Partners: G E, I D & J D Murray  
HAMSBRIGHT MINE, Dalton Plm,  
hydraulic placer, Mn, Fe  
Idle

### HAMSBRIGHT MINE, 50-ton grav Idle

### HEBCKELL MINE, Sweetwater, surface, Mn, Fe

Mine Supt: W C Mendenhall  
Prod: 30 tons

### 79-TON GRAV MILL

### ELECTRO MANGANESE CORP

1400 Loraine, NW Knoxville

Pres: E M Wannmaker  
VPs: R H Cronmiller, T W Bennett  
Treas: Otto Neumann  
Sec: W F Ferris  
Supt: W A Parsons  
Gen Mgr: W D Morgan  
Pth Mgrs: H L Chamberlain &  
W A Parsons  
Research Engr: W L Hammerquist  
Ch Engr: D D Forbes  
Sales Rep: D S Collins  
Purch Agt: P O Raggett, Jr  
REFINERY (TWO PL), Knoxville,  
electro manganese  
Prod: 7,260,000 lbs per year at  
each plant

### FEDERAL CHEM CO

Mt Pleasant  
Mgt: D S Miller  
PHOSPHATE MINE

### HARSH PHOSPHATE CO

Arlington Ave, Nashville 19  
Gen Mgr: M G Harsh  
Sec: T L Harsh  
MINE, 3 mi SE of Nashville,  
surface, phosphate rock  
Prod: 125 tons

### HIGHLAND MINING CORP

Centerville  
Pres & Gen Mgr: Bill Davis  
VP: D Brown  
Sec: M Brown  
HIGHLAND MINE, Centerville,  
surface, phosphate rock  
Prod: 700 tons

### INTERNAT'L MIN & CHEM CORP

20 N Wacker Dr, Chicago 6, Ill  
PHOSPHATE MINERALS DIV  
Columbia  
Mgt: C L Richards  
CONSOL FELDSPAR DEPT  
Erwin  
Mgt: E W Koenig  
(See Ariz, Colo, Fla, Ill, Miss,  
New Mex, N Dak, Ohio, S Dak,  
Va)

### MINE EQUIPMENT CO

Pressnell Bldg, Columbia  
Part: Wayne Pressnell, Harry  
Pressnell, W J Davis,  
Wm C Fraser, H R Mosley  
MINE, surface, phosphate  
Gen Mgr: Wayne Pressnell  
Asst Gen Mgr: Harry Pressnell  
Geol: H R Mosley  
Prod: 1,000 tons  
300-TON PLOT MILL

### MONSANTO CHEM CO

Columbia  
MINE, 8 mi SW of Columbia,  
surface, dragline excav, phosphate  
Gen Mgr: Phos Div: J L Christian  
Purch Agt: E L Sanderlin  
Mgt: E J Bock  
Mine Supt: H A Webster  
Asst Supt: E W Miles  
Engr: R B Shaffer  
Mech Engr: W C Robbins  
Elec Engr: R L Van Fossen  
Safety Engr: A N Allen  
GRAV MILL  
ELEC FURN, 25,000-kw, yellow  
phosphorus  
(See Ala, Ida, Mo)

### NORTH CAROLINA FELDSPAR PROD CO

Erwin  
MILL, dry grinding, feldspar  
(Owned by Pacific Tin Consl)

### OWENS AG PHOS CORP

Centerville  
PHOSPHATE MINE

### PACIFIC TIN CONSOL

(See North Carolina Feldspar Co,  
Tenn, Ga, N C)

### RIVER & RAIL PHOSPHATE CO

135 2nd Ave N, Nashville  
Pres & Gen Mgr: I H Jordan  
Sec: S E Wheeler  
Gen Supt: Claude Warren  
MINE, 8 mi NW of Nashville,  
surface, dragline, raw phosphates  
PLANT, Jordanla, Tenn

### SOUTHERN MICA CO

Johnson City  
Pres & Gen Mgr: C Bailey Rice  
VP & Gen Supt: J F Reynolds  
Sec: Wanda B Hammett  
50-TON GRINDING MILL, Johnson  
City  
(See N C)

### TENNESSEE COPPER CO

Copperhill  
BURRA BURRA, EUREKA, BOYD,  
CALLOWAY & MARY MINES, Au,  
Ag, Cu, Zn, Fe  
Gen Mgr: T A Mitchell  
Mine Supt: H F Kendall  
Prod: 1,000,000 tons per yr  
Mill Supt: F M Lewis  
3,000-TON FLOT MILL,  
(See N Y)

### TENNESSEE VALLEY AUTHORITY

Knoxville  
KNOB CREEK, Columbia,  
3 mi N of Columbia, surface,  
phosphate  
Gen Mgr: Aubrey J Wagner  
Gen Supt: V S Wildsmith  
Mech Engr: Henry T Putz  
Safety Engr: J M Sisson  
Mine Supt: Chas A Irwin  
Prod: 300 tons

### U S STEEL CORP, TENN COAL & IRON DIV

Jefferson City  
ZINC ORE MINE & FLOT MILL  
MINE, undergr  
Cap: 480,000 net tons crude  
sulf ore per year  
MILL  
Cap: 30,000 net tons Zn Concen  
per year  
Gen Supt: Frank B Brophy  
Supt of Mine: J A Miller  
Supt of Mill: S W Foreay  
(See Ala, Mich, Minn, Mont, N Y,  
Tenn, Utah)

### VIRGINIA-CAROLINA CHEM CORP

Box 1797, Richmond 14, Va  
Pres: J A Howell  
VP: C E Heinrichs  
TENN MNG DEPT, Mt Pleasant,  
surface, dragline, phos  
(See Fla)

### WOOD, L A

Sweetwater  
BARITE MINE

## TEXAS

### AMERICAN SMELTING & REFINING CO

Box 111, El Paso  
Mgt: S W Dept: Ben D Roberts  
Asst Mgr: R E Shinkoskey  
PI Engr: J W English  
Purch Agt: E E Redman  
RETORT SMELTER, Amarillo, Zn  
Mgt: P R Rose  
Prod: 55,500 tons per year  
EL PASO SMELTING WORKS, 2 mi  
N of El Paso, Pb, Cu smelting &  
converting, Zn fuming  
Supt: T J Woodside  
Prod: 250,000 tons per year  
REFINERY, Corpus Christi, elec Zn  
Mgt: A C Jephson  
Prod: 30,000 tons (R year  
(See Ariz, Calif, Colo, Idaho, Ill,  
Mont, Neb, N J, New Mex, N Y,  
Okla, Utah, Wash)

### AMER ZINC CO OF ILLINOIS SUBSID OF AMER ZINC, LEAD & SMLG CO

Box 577, Dumas  
VP & Gen Mgr: R A Young  
MACROVEC SMELTER, Zn  
Bus Mgt: W E R Smith  
Purch Agt: W G Hollifield  
(See Amer Zinc-III, Amer Zinc-  
Tenn, Amer ELAS, Mo, Okla,  
Wash)

### AMERIMEX MNG CO

Box 626, Alpine  
MINE, Brewster Co, Hg  
Under devel

### ARTIE-BELL MNG CORP

1603 S Johnson, Pecos  
Pres: D D Burcher  
VP: J F Crews  
Sec-Treas: R P Yell  
ARTIE-BELL #1, Terlingua,  
undergr, Hg  
Gen Mgr: J F Crews  
Geol: W H Stephenson  
Mine Supt: D D Burcher

### CERTAIN-TEED PROD CORP

Acme  
MINES, undergr, gypsum  
(See Iowa, Mich, N Y, Penn, Utah)

### DUAL SULPHUR & POTASH CO

Mellie Esperson Bldg, Houston 2  
Pres: Geo F Zoffman  
VP & Treas: Eugene German  
VP & Asst Gen Mgr: W F Morris  
Sec: V J Thornhill  
ORCHARD MINE, 2 mi SE of  
Orchard, sulphur  
Acting Res Mgr: X T Stoddard  
(See New Mexico)

### FREEMONT SULPHUR CO

161 E 42nd St, New York 17, NY  
Gen Mgr: B A Axelrad  
SULPHUR MINE, Nash Dome  
SULPHUR MINE, Hoskins Mound  
(See La, N Y)

### JEFFERSON LAKE SULPHUR CO

1608 Whitney Bldg, New Orleans 12,  
La  
CLEMONS DOME MINE, Brazoria,  
TX  
VP & Gen Mgr: Harvey A Wilson  
Asst Gen Mgr: L V LaBend  
Purch Agt: Carl McElrath  
LONG POINT DOME, Fort  
Bend Co, S  
(See La, Wyo)

### LONE STAR STEEL CO

Box 8087, Dallas  
Pres: E B Germany  
Exec VP: W H Johnson  
VP Oper, Res & Tech Develop:  
L G Graper  
VP Sales: Walter T Moreland  
VP Pub & Emp Rel: L D Webster  
VP Purch: John M Morris  
Compt: Max Dodson  
Sec: Edwin S Greer  
Gen Pl Supt: J M Brashar  
Asst G P Supt: Steel Div: A  
Malone  
Asst G P Supt, Coke-Iron-Ore Div:  
S G Anderson

Met: Bruce Dedman  
Geol: John Reiff  
Elec Engr: L W Bramlett  
Mech Engr: L J Hoffmann  
Und Rel Dir: G C Graves  
Safety Dir: Sam Beasley  
LONE STAR MINES, BLACK MTN  
& RODGERS, surface, Fe  
Mine Supt: M J Hughes  
Prod: 10,000 net tons  
10,000-TON GRAY MILL  
Mill Supt: A C Melting  
BLAST FURNACE  
Purch: P G Stark  
Cap: 1,200 tons daily

### MILWHITE COMPANY

Box 15030, Houston  
Pres: Max B Miller, Jr  
Exec VP: P A Frank  
VP: A B Willis  
PRODUCERS of bleaching clays,  
insecticide, diluents, barite,  
celestite & talc

### NATIONAL GYPSUM CO

Rotan  
QUARRY & PLANT, Rotan,  
surface, gypsum  
Mine Supt: T W Smith  
Plant Mgr: J E Irvin  
Prod: 800 tons  
(See Iowa, Kans, Mich, NY,  
Ohio, Pa, Va)

### NATIONAL LEAD CO, BAROID DIV

2404 Danville St, Houston 6  
Gen Mgr: G B Coale  
Asst Gen Mgr: J W Hofstetter  
Prod Mgr: R ginald Rowand  
CORPUS CHRISTI PL, barite, dry  
grinding mill  
Mill Supt: D M Middleton  
HOUSTON PL, bentonite, barite,  
dry grinding mill, oil well chem  
Supt: R J Penrose  
MULDOON MINE, Muldoon,  
bentonite, surface  
Supt: R J Penrose  
TEXARKANA PL, Texarkana, oil  
well chem, dry grinding  
Supt: J A Smith  
(See Ark, Calif, Kans, Mo, Nev,  
N Y, S Dak, Wyo)

### NATIONAL LEAD CO, TEXAS MINING & SMELTING DIV

Box 559, Laredo  
Mgt: J C Archibald, Jr  
Ch Chem: Fidel Gonzales  
Compt: Claude Notyon



REVERB & BLAST FURNACES,  
FUMING PL., Highway 81, N  
Laredo

Plant Supt: R L Kulpaca  
(See Ark, Calif, Kans, Mo, Nev,  
N Y, S Dak, Wyo)

#### PAULSEL MNG CO

4012 Byers Ave, Fort Worth,  
Texas  
MINE, Brewster Co, Hg  
Under devel

#### PHELPS DODGE REFINING CORP. SUBSID OF PHELPS DODGE CORP

Box 1372, El Paso  
Pres: Walter C Bennett  
Exec VP: C S Harloff  
VPs: Cleveland E Dodge,  
Howard Barkell

Sec & Counsel: Julian B Beatty  
Compt: Raymond Soden  
Treas: M W Urdubart  
Asst Treasurers: H R Dobbs,  
R D Barnhart

ELEC COPPER REFINERY,  
COPPER SULPHATE PLANT, also  
NiSO<sub>4</sub>, So, Te  
Works Mgr: E W Donahue  
Asst Supt: B B Kunkle  
Prod: 285,000 tons per year  
(See Ariz, New Mex, N Y)

#### RAINBOW MNG CO

Terlingua  
MINE, Brewster Co, Hg  
Under devel

#### SOUTHWESTERN GRAPHITE CO

Burnet  
Pres: George W Clemson  
VP: Robert F Miller, Sr  
VP & Gen Mgr: R P Miller, Jr  
Sec-Treas: G Miller  
Supt: G E Hilliard  
Met: D C Pesacock  
MINE, 11 mi NW of Burnet, surface,  
graphite  
Mine Foreman: Pete Bible  
Prod: 230 tons  
280-TON FLOT MILL  
Mill Foreman: Tom McAllister  
Assay: Frank Withers

#### SOUTHWESTERN TALC CORP

Box 398, Llano  
Pres & Gen Mgr: Bertram Browne  
VP & Geol: J B Upton  
ROSSMAN MINE, 25 mi E of  
Sierra Blanca, surface, talc  
Mine Supt: J E Stafford  
Prod: 190 tons  
DAVIS MINE, 22 mi SE of Llano,  
surface, soapstone  
Mine Supt: P C Mayes  
Prod: 50 tons  
200-TON PULVER MILL, Llano  
Mill Supt: J R Beeson  
Foremen: Carl Owens, J Hurtado

#### TERLINGUA MERCURY CORP

Box 330, Alpine  
Pres: R A Wagner  
VP & Gen Mgr: R N Pulliam  
Sec: Perry D Williams  
PRESNO MINE, 69 MINE, undergr,  
surface, Hg  
Geol: A R Fletcher  
Mech Eng: Joe R Rection  
Elec Eng: Antonio Macias  
Mine Foreman: W M Roberts  
Prod: 60 tons  
ROTARY PURN, Buena Siente Camp  
Supt: Tomas Zapata

#### TERLINGUA MNG CO

Terlingua  
Owner: Frank Duncan  
TEXAS GULF SULPHUR CO  
Newgulf

BOLING DIME MINE, Newgulf, S  
MOSS BLUFF MINE, Liberty, S  
SPINDLETOP MINE, Beaumont, S

#### TIN PROCESSING CORPORATION

Box 1461, Texas City  
Ch of Bd: E Warfield  
Pres: Alex L ter Braack  
VP & Gen Mgr: H F van der Laan  
Asst Gen Mgr: J R Woon  
Gen Supt & Asst Supt, Roast &  
Leach: J W Boyle  
Purch Agt: A J McSain  
Supt, Smelt: W L Pollett  
Supt, Exper Dept: B D Weaver  
Ch Chem: H H White  
Supt, Maint: B T Loooper  
Supt, Ore Stor: M L Walker  
Supt, Waste Acid Disps: R H Owens  
LONGHORN REVERB SMELTER, Sn

Prod: 80,000,000 lbs of Sn

#### UNITED STATES GYPSUM CO

300 W Adams St, Chicago 6, Ill  
MINE, at New Braunfels, surface,  
limestone  
TWO MINES, at Sweetwater, gypsum  
(See Calif, Colo, Ill, Iowa, Mass,  
Mich, Mont, New Mex, Nev, Okla,  
Utah, Va, Wash)

## UTAH

#### ABSARAKA URANIUM, INC

220 Greyhound Terminal Bldg,  
Salt Lake City  
Pres: J L Guiver  
VP: John E Hall  
Sec-Treas: P G Smith  
MINE, U<sub>3</sub>O<sub>8</sub>  
Under devel

#### ACME MNG CO

983 Mills Bldg, San Francisco,  
Calif  
CLAIMS, U<sub>3</sub>O<sub>8</sub>  
(See Calif, Colo)

#### ACME URANIUM MINES, INC

Box 114, Loa  
Pres & Gen Mgr: La Salle B Wright  
VP: Edwin J Miller  
Asst Treas: James Nelson  
Geol: P Mosier

#### ALCO URANIUM CORP

125 N Main St, Moab  
Uranium explor

#### ALICE MNG CO

Moab  
Pres: Ed Rodgers  
VP: Frank Richardson  
Sec-Treas: T C Hudson  
URANIUM-VANADIUM PROP

#### ALLADIN URANIUM CORP

506 Beeson Bldg, Salt Lake  
City  
Pres: J Walters, Jr  
VP: Sid Spencer  
Sec-Treas: Alvin Erikson  
MINE, San Rafael dist, Emery  
Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

#### ALMAR DEVELOPMENT CO

Moab  
Pres: M K Ruddock

#### ALMAR EXPLORATION CO

Moab  
Pres: M K Ruddock

#### ALMAR MINERALS, INC

Moab  
Pres: A B Ruddock  
VP: Merritt K Ruddock &  
Billings K Ruddock  
Sec-Treas: Mrs Elaine Pollock  
Chief Geol: Richard A Teichman  
MINE, U<sub>3</sub>O<sub>8</sub>  
Producing

#### ALPINE MNG CO

Box 2552, Reno  
Pres: John B White  
VPs: Paul Kruesel, David Quirk  
Sec: N G White  
LONESOME MINE, undergr, U<sub>3</sub>O<sub>8</sub>  
Box 646, Moab  
Gen Mgr: Fred H Crosby  
Under devel

#### ALTA-HELENA M & M CO

Box 323, Sandy  
Oper: Francis Coupens  
MINE, Alta-Helena Co, 17 mi E  
of Sandy, undergr, Ag, Cu  
Under devel

#### AMERICAN FORT CONS MINES

505 Dooly Bldg, Salt Lake City  
Pres: H G Blumenthal  
VP: N J Nielsen  
Sec-Treas: W J Robertson  
Gen Supt: Leslie O Burnett  
BLUE ROCK MINE, 29 mi NE of  
Pleasant Grove, undergr, Ag, Pb  
Under devel

#### AMERICAN GILSONITE CO

134 West Broadway, Salt Lake  
City  
Pres: E F Goodner

Prod Mgr: R E Nelson  
Sec-Treas: E H Owen  
MINE, Bonanza, gilsonite  
Supt: John H Baker  
Mine Foreman: F Williams  
Prod: 250 tons

#### AMERICAN METAL CO, LTD

1220-1225 Cont Bank Bldg  
Salt Lake City  
Ch of Bd: Harold E Hochschild  
Pres: Walter Hochschild  
VP & Sec: Thomas W Childs  
VP & Treas: Hans A Vogelstein  
URANIUM PROP  
Explor

#### AMERICAN METAL MNG CO

21 S W Temple St, Salt Lake City  
Pres & Gen Mgr: C S Woodward  
VP: Ben B Hall  
Sec: Louise M Orton  
Gen Supt: Frank Yancher  
Geol: Ray E Marsell  
AMERICAN METAL MINE, 25 mi E  
of Midvale, undergr, Au, Ag, Pb,  
Cu, Zn  
Idle

#### AMERICAN SMELTING & REFINING CO, UTAH DEPT

700 Pacific Nat'l Bldg, Salt Lake  
City 1  
SMELTING DEPT  
Gen Mgr, West Dept: E McL  
Tittmann

Mgr: W G Rouillard

Ore Purch: R L Rigby

Purch Agt: O P Clark

In Cng, H<sub>2</sub>SO<sub>4</sub> & Liquid SO<sub>2</sub>:

R D Williams

GARFIELD COPPER SMELTER,  
Garfield

Supt: R Thompson

Asst Supt: E V Hardy

MINING DEPT

Mgr, West Dept: F V Richard

Ch Geol: W R Landwehr

Milling Engr: N Weiss

(See Ariz., Calif, Colo, Ida, Ill,  
Mont, New Mex, N Y, Wash)

#### AMERICAN STAR MINING CO

Newhouse Bldg, Salt Lake City  
Pres: Cecil Finch  
VP: Cecil Finch, Jr  
Sec: W W Watson  
AMER STAR MINE, Tintic dist,  
Ag, Au, Cu, Pb  
Leases: Chief Cons Mng Co

#### AMERICAN SULPHUR & REFINING CO

Sulphurdale  
Pres: Thos A Neale  
VP & Sec-Treas: Henry H Wheeler  
MINE, Sulphurdale  
Under devel  
MILL,  
Under constr

#### AMERICAN URANIUM

Box 574, Uranium Bldg, Moab  
Pres: John H Parsons  
VP: Dan G Provostich  
Sec: O C Parsons  
Treas: Robert Douglas Carroll  
Dir: Jos F Costanza  
URANIUM PROP  
Explor

#### AMERICAN URANIUM ENGINEERING CO

Box 298, Durango, Colo  
Pres: R E Simpson  
VP: Robert E Simpson  
Sec-Treas: William T Hughes  
Gen Mgr: Ralph E Simpson  
WHITE CANYON #1 MINE, Frey  
Point, San Juan Co  
Development work

#### AMURIANUM CORP

Marshall Court, Moab  
URANIUM PROP, Lisbon Fault-Big  
Indian area  
Drilling program  
(See New Mex)

#### ANACONDA COPPER MNG CO - NAT'L TUNNEL & MINE DEPT

818 Kearns Bldg, Salt Lake City  
Pres: Robert E Dwyer  
Sec-Treas: C Earl Moran  
Mgr: Frank A Wardlaw, Jr  
MINES, West Mtn dist, Bingham  
(Operated by lessees)  
(See Calif, Nev, New Mex, N Y)

#### ANCIENT RIVER CHANNELS GOLD MNG CO

Suite 1, Cornett Bldg, Las Vegas, Nev

Pres: Thomas H Berry  
VP & Sec: Wm T Berry  
Gen Supt: Res F Smith  
Geol: Dr F W Christensen  
MINERAL HILLS MINE, Marysvale,  
2 mi NE of Marysvale, U  
Under devel

#### APACHE URANIUM CORP

Salt Lake City  
Pres: Ben C Rich, 1862 Sunnyside  
Ave, Salt Lake City  
VP: Eldon J Facer  
Sec-Treas: Douglas N Thompson  
MINE, Big Indian dist, San Juan  
Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

#### APEX & LIBERTY BELL

Owner: Skoro Cons M & M Co  
Sec: Donald K Weits  
501 Jefferson St, Boise, Ida  
MINE, Box Elder Co, Au, Ag, Pb

#### ARCO URANIUM, INC

409 University Bldg, Denver, Colo  
Pres: Benj Arkin  
VP: M H Robineau  
Sec-Treas: T H Henberg  
CLAIMS, Henry Mtns, undergr,  
U<sub>3</sub>O<sub>8</sub>  
Mine Supt: Dell Litz  
Undergr prod

#### ARROW URANIUM CORP

1305 Newhouse Hotel, Salt Lake  
City  
Pres: Fred Kuhn  
VP: Grant Wirick  
Sec: Bruce A Hartman  
Treas: Barr Smedley  
MINE, Indian Crk dist, San Juan  
Co, U<sub>3</sub>O<sub>8</sub>

#### ARUNDEL MNG CO

Marysvale  
Leases: A O de Bie  
DEERTRAIL LEASE, Ag, Cu, Au,  
Pb, Zn, Sh  
Gen Mgr: E R Jones  
Dir Mgr: John W Wilhelm  
Gen Supt: J G Sylvester

#### ATLAS URANIUM CORP

Box 746, Moab  
Pres & Gen Mgr: J C Burgess  
VP: J Fred Dineen  
Sec-Treas: T J Christensen  
LAST CHANCE, BUCKSKIN #1,  
San Juan Co, undergr, U<sub>3</sub>O<sub>8</sub>, V  
Mine Foreman: Gilbert Allred  
Undergr prod

#### BEAVER BUTTE URANIUM CO

2966 E 3215 S, Salt Lake City  
Pres: Robert L Cook  
VP: Louis Leasing  
Sec: Arthur M Bolle  
MINES, Newton dist, Beaver Co,  
undergr, U<sub>3</sub>O<sub>8</sub>  
Cons Geol: Rex Smith  
Under devel

#### BIG BUCK MINES

Monticello  
Owner: Donald T Adams  
URANIUM PROPERTIES, San Juan  
Co  
Producing

#### BLUE CHIP URANIUM CORP

Monticello  
Gen Mgr: Joseph P Smith  
Geol: John H Eggers  
Met: Wm C Patterson  
BALDWIN HILLS LODGE, San Juan  
Co, surface, U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Colo)

#### BLUE MOUNTAIN URANIUM MINES, INC

230 N 3rd St, Grand Junction,  
Colo  
Pres: Willard P Hammond  
VP: Howard J Nesbitt  
CLAIMS, San Juan Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

#### BLUE STAR MNG CO

Beaver  
Pres: Lory Free  
Sec: Ed Lowman  
MINE & 50-TON MILL, near  
Beaver, WO3

#### BONNEVILLE, LTD

540 W 7th South St, Salt  
Lake City 4  
Pres: W L Bradley  
VP-Gen Mgr: L W Ferris  
Purch Agt: W R Thomas  
MINE, Woodruff, KCI  
1,000-TON FLOT MILL  
Gen Supt: Jesse V Ecton

Asst Supt & Mill Foreman:  
J. Hanks Wiley  
Mine Foreman: Nelson Leamus  
Met. D. C. Hunter  
Assay: Clyde Andrew, Clyde  
Haines

**BOOMERANG MINING CO**  
Box 306, Gateway, Colo  
URANIUM-VANADIUM PROPERTIES  
at West Gateway, Grand Co.  
Producing

**BRIDGER-JACK, INC**  
150 W Main St, Grand Junction,  
Colo  
Pres: Garth W Thornburg  
VP: O E Thornburg  
Sec: Arthur M Kirkendall  
BRIDGER-JACK MINE, S of Moab,  
U<sub>2</sub>O<sub>8</sub>, V  
Under devel

**BRONSON & COOPER**  
Monticello  
HAPPY JACK MINE, White Canyon,  
San Juan Co, U<sub>2</sub>O<sub>8</sub>  
Producing

**W W BRUNKE**  
Monticello  
BIG BUCK MINE #9, Big Indian  
dist, San Juan Co, U<sub>2</sub>O<sub>8</sub>  
Producing

**THE BRUSH BERYLLIUM CO**  
4301 Perkins Ave, Cleveland 3,  
Ohio  
Pres: B Kjellgren  
VPs: H W Schaffner, H W Bass,  
C W Schweinfelder  
Treas: D H Herberberger  
Geol: Norman C Williams  
Purch Agt: R W Cobb  
EXPLORATION, Jamb & Toole Co's  
Sheep Rock dist, Be

**BULLION MONARCH MNG CO, INC**  
Box 888, Idaho Falls, Ida  
Pres & Gen Mgr: Arch M Wackerli  
VPs: Ross Corbett  
Sec-Treas: Fred E Ring  
BULLION MONARCH MINE, Marysvale,  
undergr & surface, U<sub>2</sub>O<sub>8</sub>  
Lessees: Vanadium Corp of America  
Producing

**CALERA MNG CO,**  
**SUBSID HOWE SOUND CO**  
Garfield  
Local Rep: J S Mitchell  
Ch Acct: W E Taylor  
CHEM REDUC PL, Cu, Co  
(See Calera, Idaho; Howe Sound,  
Wash & East)

**CAL URANIUM COMPANY**  
Monticello  
Pres: Albert B Ruddock  
VPs: Merrill K Ruddock &  
Billings K Ruddock  
Sec: E Pollack  
Gen Mgr: F A McCary  
Gen Supt: Earl Halderman  
Geol: Richard Teichman & Jack  
McLellan  
Mng Eng: Jim J Allen  
MINE, SAN JUAN SHAFT, 25 mi  
SE of Moab, undergr, U<sub>2</sub>O<sub>8</sub>  
Mine Foreman: Earl Halderman

**CANE SPRINGS URANIUM CORP**  
404 N 2nd St W, Salt Lake City  
Pres: Clarence D Gray  
VP: Byron Krumholz  
PROPERTIES & LEASES, San Juan  
Co, U<sub>2</sub>O<sub>8</sub>  
Under devel

**CERRO de PASCO COPPER CORP**  
40 Wall St, New York  
Pres: B P Koenig  
VP & Purch Agt: G P Sawyer  
Sec-Treas: R F Mitchell  
URANIUM PROPERTIES, near Hite  
Under devel

**CERTAIN-TEED, PROD CORP**  
Siquid  
GYPSUM MINE  
(See Iowa, Mich, NY, Pa, Tex)

**CHIEF CONS MNG CO**  
808 Dooley Bldg, Salt Lake City  
Pres: Cecil Pritch  
VP & Gen Mgr: Cecil Pritch, Jr  
Sec: W W Watson  
CHIEF R. GEMINE, EUREKA HILL,  
PLUTUS & EAST CROWN POINT  
CONE MINES, Eureka, undergr, Zn,

Ph, Ag, Au  
Gen Supt: G A McMillan  
Ch Eng: R E Steele  
Geol: Max Eason  
Elec Eng: Alton Baker  
Cons Engr: J H Pitts  
Mine Supt: Webster Brady  
Prod: 400 tons

**CHUTE CANYON URANIUM CO**  
334 Judge Bldg, Salt Lake City  
Pres & Gen Mgr: Frank L Morgan  
VP: Grant S Thorn  
Sec: C G Salisbury  
Cons Geol: Geo Hansen  
CHUTE CANYON MINE, Temple  
Mt dist, Emery Co, undergr,  
U<sub>2</sub>O<sub>8</sub>, V, Co  
Producing

**COLORADO CONS MINES CO**  
114 Walker Bank Bldg, Salt Lake  
City  
Pres: H E Raddatz  
VP: Harriet D Travis  
Sec: Glen Hardy  
Gen Mgr: M D Paine  
COLORADO CONSOLIDATED MINE,  
Dividend, 2 mi SE of Eureka, under-  
gr, Pb, Au, Ag, Cu  
Idle

**COLORADO FUEL & IRON CORP**  
Cedar City  
BLOWOUT, COMSTOCK & DUNCAN  
MINES, surface, Fe  
Res Engr: R L Wahl  
(See Colo, Wyo)

**COLUMBIA IRON MNG CO**  
**SUBSID U S STEEL CORP**  
Ruess Bldg, San Francisco, Calif  
Pres: A G Roush  
VP: L S Dahl  
Sec: Thomas Ashby  
Gen Supt: G D MacDonald  
Mgr, Raw Mat Devel: R C Talbot  
Ch Engr: W F Pruden  
Dir, Empl Rel & Safety: C T Spivey  
Dir of Purch: H S Christensen  
MINES, Iron Min & Desert Mound,  
20 mi W of Cedar City, surface, Fe  
Gen Mine Supt: G D MacDonald  
Mine Engr: G B Standiford  
CRUSHING & SCREENING PLANTS,  
Desert Mound & Iron Min  
(See U S Steel, Ala, Ky, Mich, Minn,  
Mont, Pa, Tenn, Utah)

**COMBINED METALS**  
**REDUCTION CO**  
Box 180, Salt Lake City 18  
Pres: E H Snyder  
VPs: Otto Heeres, W H Kelsey  
Sec: C M Christensen  
Treas: O F Burton  
Purch Agt: E G Black  
MINE, undergr, Zn, Pb  
Bauer  
Gen Supt, Utah Oper: S E Craig  
Geol: Earl B Young  
Mech Engr: A J Schindler  
Met: H A Dawson  
Elec Engr: J M Ridges  
Mine Supt: O D Cameron  
Mine Engr: T J Barrett  
FLOT MILL, at mine  
Mill Supt: Winford Hector  
Asst Supt: D W Rowberry  
Assay: H K Hansen  
(See Nev)

**COMMONWEALTH LEAD MNG CO**  
424 Felt Bldg, Salt Lake City 1  
Pres & Gen Mgr: J F Featherstone  
VP: R B Garf  
Sec: Dean R Featherstone  
Geol: R E Marsell  
CALVIN MINE, 7 mi E of Melrose,  
undergr, Pb, Ag  
COMMODORE MINE, 10 mi SE of  
Stockton, under-gr, Pb, Ag, Cu, Zn  
Geol: R E Marsell  
Under devel  
JUNIPER CL, Moab, U<sub>2</sub>O<sub>8</sub>  
Under devel

**COMMONWEALTH MNG CO**  
**OF S D**  
Box 882, Sioux Falls, S D  
COMMONWEALTH URANIUM #1,  
near Greenriver, U<sub>2</sub>O<sub>8</sub>  
Supt: J E McCormack (Grand  
Junction, Colo)  
COMMONWEALTH URANIUM #2,  
near Kanab  
Under devel

**COMSTOCK URANIUM & OIL**

**CORP**  
600 Utah Savings & Trust Bldg,  
Salt Lake City  
Pres: S A Walsh  
VP: M A Keyser, Jr  
Sec-Treas: C T Praggastis  
Cons Geol: J J Beeson  
CORE DRILL DEVEL, Temple Mt  
area, U<sub>2</sub>O<sub>8</sub>  
Under devel  
TUNNEL DEVEL, Torrey, U<sub>2</sub>O<sub>8</sub>  
Under devel

**CONGO URANIUM CO**  
404 Boston Bldg, Salt Lake City  
Pres: Jay W Jacobson  
VP: R G Shaw  
Sec-Treas: Tom Metos  
URANIUM PROP, Henry Mtn dist,  
Garfield Co.  
Under devel

**CONSOL EUREKA MNG CO**  
132 S Main St, Salt Lake City 1  
Pres: James E Hogle  
VP: J C Johnson  
Sec: L J Lerwill  
Purch Agt: Sherman B Minckley  
(See Nevada)

**CONS URANIUM MINES, INC**  
307 Darling Bldg, Salt Lake City  
Pres & Gen Mgr: E G Frawley  
VP: Roy & Hardy  
Sec-Treas: C M Christensen  
Purch Agt: Robert Wallin  
TEMPLE MT MINE, 48 mi SW of  
Greenriver, undergr, U<sub>2</sub>O<sub>8</sub>, V  
Mine Supt: Wesley Moulton  
MUDDY RIVER CLAIMS, 30 mi  
from Temple Mtn, U<sub>2</sub>O<sub>8</sub>, V  
Under devel  
(See Colo, Nev)

**CONSOLIDATED VIRGINIA**  
**MNG CO**  
Moab  
URANIUM PROP, Moab-Greenriver  
area  
Explor

**CONTINENTAL URANIUM, INC**  
Box 608, Grand Junction, Colo  
Pres: Willard Gidwitz  
VP: Ray Sullivan  
Sec: Max H Braun  
Gen Mgr: Robert Preece  
Geol: Harold M Smithson  
MINE, 55 mi SE of Moab, undergr,  
U, V  
Under devel  
(See Colo)

**COOK, FRED**  
Gold Hill  
MINE, WO<sub>3</sub>  
Under devel

**CROWN URANIUM CO**  
305 Star Bldg, Casper, Wyo  
URANIUM PROP, Stick Rock dist,  
U<sub>2</sub>O<sub>8</sub>  
Under devel  
(See Colo, Wyo)

**CULLEN-CAMPBELL IRON**  
**MNG CO**  
c/o Trust Dept, Cont Bank &  
Trust Co, Salt Lake City  
IRON MINE, Iron Springs dist,  
Iron Co

**DEER TRAIL MINES**  
Marysvale  
Pres & Gen Mgr: John W Wilhelm  
VP: I H Fehr  
Sec: Dwight L King  
Gen Supt: Lee Roy Troutt  
DEER TRAIL, VALDASIC, TRINITY  
& RAINBOW MINES, near Marys-  
vale, undergr, Ag, Au, Pb, Cu

**DIXIE-APEX MINE**  
Owner: Emerald L Co  
118 S 106 East  
St George  
MINE, Tuzigabet dist, Wash Co,  
Co, Ag, Pb, Cu  
Under devel

**DODGE URANIUM CORP**  
228 Majestic Bldg, Denver, Colo  
STEAMBOAT MESA CLAIMS, Grand  
Co, U<sub>2</sub>O<sub>8</sub>  
Under devel  
McCRACKEN WASH CLAIMS, Paradise  
Basin, San Juan Co, U<sub>2</sub>O<sub>8</sub>  
Drilling program  
(See Colo)

**DON DANVERS URANIUM CO**

**URANIUM-VANADIUM MINE, La Sal**  
Mining dist, San Juan Co

**DOUGOILCO, INC**  
Box 1021, Denver, Colo  
Pres & Gen Mgr: L B Conner  
VP: K Grebing  
Sec-Treas: C B Lein  
LITTLE BADGER MINE, San Juan  
Co, surface, U<sub>2</sub>O<sub>8</sub>  
Under devel

**DOVE CREEK URANIUM CO**  
Dove Creek, Colo  
Partners: C F Snyder, C L Snyder,  
C F Eggers, E J Robinett  
T L Jackson  
ATOMIC KING, Came Springs Canyon,  
undergr, U<sub>2</sub>O<sub>8</sub>, V  
Producing

**DRAGON CONS MNG CO**  
Eureka  
Pres: J Will Knight  
VP: J J Lillie  
Sec: Rom Warburton  
Geol: M B Klidale  
Purch Agt: T K Davis  
DRAGON MINE, 4 mi S of Eureka,  
undergr & surface, halloysite clay  
Mine Engr: R C Thomas

**EAGLE PICHER CO, THE**  
132 S 4th St, Grand Junction,  
Colo  
URANIUM PROSPECTING, Grand,  
San Juan Co  
(See Ariz, Colo, Ill, Nev, Kans,  
Okla, Wisc)

**EAST LISBON URANIUM CO**  
404 Boston Bldg, Salt Lake City  
Pres: H G Sato  
VP: Tom P Costas  
Sec: Robert L Cramer  
URANIUM PROP, Lisbon Fault  
area, San Juan Co  
Explor

**EL DORADO MNG CO**  
223 Phillips Petrol Bldg, Salt  
Lake City  
Pres & Gen Mgr: Whitney C Hansen  
VP: Sherman Jensen  
Sec: Alvin G Pack  
Treas: Ivin O Nichols  
CLAIMS, North Bingham, Indian  
Cr, San Juan Co & Nodomo Bench,  
Garfield Co, undergr, U<sub>2</sub>O<sub>8</sub>  
Under devel

**EMPIRE MINES CO**  
818 Kearns Bldg, Salt Lake  
City  
Sec: Rom Warburton  
MINE, Tintic dist, Jamb Co,  
Ag, Au, Pb, Cu  
Producing

**EUREKA LILLY CONS.**  
**MNG CO**  
114 Walker Bank Bldg, Salt  
Lake City 1  
Pres: H E Raddatz  
VP: Harriet D Travis  
Sec: Glen Hardy  
Gen Mgr: M D Paine

**EUREKA LILLY MINE, Dividend,**  
undergr, Au, Ag, Cu, Pb  
Idle

**EUREKA STANDARD CONS**  
**MNG CO**  
114 Walker Bank Bldg, Salt  
Lake City 1  
Pres: H E Raddatz  
VP: Harriet D Travis  
Sec: Glen Hardy  
Gen Mgr: M D Paine  
MINE, EUREKA STANDARD, near  
Dividend, Au, Ag, Cu, Pb  
Idle

**FEDERAL URANIUM CORP**  
803 Continental Bank Bldg,  
Salt Lake City  
Ch of Bd: Reed W Brinson  
Pres: Paul T Walton  
Sec-Treas: D Howe Moffatt  
URANIUM PROP, Big Indian  
dist, San Juan Co  
Under devel

**FLORIDA E MNG CO, THE**  
2105 W Erie, Lorain, Ohio  
Pres: Jos Lopatovich  
VP: Miles C Spencer  
Sec: Nick Palanico  
Treas: Walter Ahlquist  
DUSTY MINE, U<sub>2</sub>O<sub>8</sub>  
White Canyon

**FORTUNE OIL & URANIUM**  
EXPLOR CO

## Utah

- Moab**  
Ch Geol: Van C Anderson  
**URANIUM CLAIMS**
- FOUR CORNERS URANIUM CORP**  
Supt: William N Binder  
PROP, near Cisco, Grand Co, U<sub>3</sub>O<sub>8</sub>, V
- FRISCO SILVER LEAD MNG CO**  
39 Exchange Place, Salt Lake City 1  
Pres: Paul H Hunt  
Sec: David H Bullough  
MINE, 25 mi W of Milford, undergr, idle
- GARFIELD CHEMICAL & MFG CO**  
700 Pac Nat'l Life Bldg, Salt Lake City  
750-TON SULPHURIC ACID PLANT Garfield
- GERONIMO URANIUM MNG CORP**  
345 S State St, Salt Lake City  
EAGLE #2 & 7 CL, U<sub>3</sub>O<sub>8</sub>  
Drilling  
PARROT CL, U<sub>3</sub>O<sub>8</sub>  
Limited prod
- GLENNY-CUTLER**  
704 Newhouse Bldg, Salt Lake City  
HERTZ & GREEN VEIN MINES, Sinbad & San Rafael dists, Emer Co, U<sub>3</sub>O<sub>8</sub>  
Producing
- GLOBE URANIUM CO**  
2532 S 15th East, S L C  
Pres: Leo Bateman  
URANIUM CL  
Under devel
- GOLD EMPIRE, INC**  
URANIUM DIV  
1717 E Colfax Ave, Denver 18, Colo  
URANIUM HOLDINGS, Grand Co (See Wyo)
- GRAMLICH EXPLORATION CO**  
Moab  
Pres & Gen Mgr: J W Gramlich, Sr  
Gen Supt: P F Gramlich  
Geol: Duff Ebbelley  
BLUE JAY & SAN JUAN CLAIMS, undergr, surface, U<sub>3</sub>O<sub>8</sub>  
Asst Supt: J W Gramlich, Jr  
Mine Engr: Hub Newell
- HARRIS MNG CO, INC**  
Box 277, Baxter Springs, Kans  
URANIUM CL, various parts of Utah  
(See Kans, Okla)
- HIDDEN SPLENDOR MNG CO, SUBSID OF ATLAS CORP**  
Uranium Center, Grand Junction, Colo  
Pres & Gen Mgr: Vernon J Pick  
HIDDEN SPLENDOR MINE (formerly Delta Mine), U<sub>3</sub>O<sub>8</sub>  
Producing
- HOLMES URANIUM CORP**  
Hatch  
Treas: Eldon L Porter  
MINE, Durkey dist, U<sub>3</sub>O<sub>8</sub>  
Maryvale  
Explor
- HOMESTAKE MNG CO, UTAH DIV**  
Moab  
Explor Geol: Paul C Henshaw  
Supt of Mines: Donald T Delicate  
Asst Supt of Mines: R J Stoehr  
Acct: Brooks W Roebuck  
LITTLE BEAVER MINE, Grand Co, U<sub>3</sub>O<sub>8</sub>  
Producing  
LA SAL LEASE, U<sub>3</sub>O<sub>8</sub>  
Producing  
ALICE LEASE, U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Calif, S Dak, Wyo)
- HORN SILVER MINES CO**  
39 Exchange Place, Salt Lake City  
Pres: P H Hunt  
Sec-Treas: D H Bullough  
HORN SILVER MINE, Milford, Au, Ag, Pb, Zn  
(Leased to Metal Producers, Inc)
- HOWELL MINING CO**  
816 Newhouse Bldg, Salt Lake City  
Pres: Rich Whitmore  
Sec: B B Hall  
Gen Mgr: H E Havenor  
YELLOW CANARIE CLAIMS, near Marysville, U  
Under devel  
ATHERLY CLAIMS, near Marysville (Merged into Federal Uranium Corp, which see)
- HUGHES MNG CO**  
Box 1, N Salt Lake City  
Pres: Vern Hughes  
Sec: Jack Neese  
MINE, U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Wyo)
- HUNT OIL CO**  
Grand Junction, Colo  
DRILLING, La Sal Cr, U<sub>3</sub>O<sub>8</sub>  
Under devel  
THORNBURG LEASE, U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Colo)
- IBEX GOLD MINING CO**  
Box 37, Provo  
Pres: J Wm Knight  
Mgr & Sec-Treas: Richard Knight  
IBEX, KEYSTONE, MARETTE, E P H & ALTO MINES, 35 mi NW of Delta, undergr, Cu, Au  
Idle
- IDAHO-MARYLAND MINES CORP**  
1320 Cont Bank Bldg, Salt Lake City  
Pres: Bert C Austin  
Exec VP & Gen Mgr: Max Bechhold  
Sec-Treas: Charles E Allen  
URANIUM PROP, Moab area  
Explor  
(See Calif)
- IMPERIAL URANIUM CO**  
630 Judge Bldg, Salt Lake City  
Pres: Lawrence L Summerhays  
Sec-Treas: E D Lybhart  
RED CANYON, CAINEVILLE CL, U<sub>3</sub>O<sub>8</sub>  
Gen Supt: Vernon Shiner  
Explor
- INDEX-DALEY MINES CO**  
21 SW Temple St, Salt Lake City  
Pres & Gen Mgr: Charles S Woodward  
VP: Glen A Finlayson  
Sec: R W Edmunds  
DALEY MINE, Mountain Home, 24 mi NE of Mountain Home  
Mine Foreman: George A Rich  
Explor
- INDIAN CR URANIUM & OIL CORP**  
2320 S Main St, Salt Lake City  
Pres: O C Larson  
VP: Kenneth Taylor  
Dir: Ray S Lester  
BONANZA, CUTLER PROP, undergr, U<sub>3</sub>O<sub>8</sub>  
Monticello  
Gen Mgr: O C Larson  
Geol: R B Shelley  
Mine Supt: Curtis Judy
- INSPIRATION LEAD CO, INC**  
Moab  
URANIUM PROP, undergr, U<sub>3</sub>O<sub>8</sub>  
Gen Supt: W H Simons  
Under devel  
(See Ida, Wash)
- INTERMOUNTAIN MNG, INC**  
Suite L Masonic Bldg, Reno, Nev  
Pres & Gen Mgr: J A Chrysler  
VP: Louis G Chrysler, Jr  
Sec: P M Barcoux  
CLAIMS, Grand, San Juan, Kane, Emery & Montrose Co, U<sub>3</sub>O<sub>8</sub>  
Under devel
- INTERNAT'L SMLTG & REF CO, A SUBSID OF ANACONDA COPPER MNG CO**  
818 Kearns Bldg, Salt Lake City  
Gen Mgr, Utah Oper: F A Wardlaw, Jr  
Mng Supt: J F Dugan  
Met Mgr: B L Sackett  
Purch Agt: T K Davis  
MILL & SMELTERS, near Tooele  
Gen Supt: Carlos Bardwell  
Safety Engr: T K Voyer  
Ch Chem: H T Goodjohn  
1,300-TON FLOT MILL
- Supt: R V Kettner  
Met: George Kostello  
SMELTER & REFINERY  
(See Ariz, N Y)
- INTERSTATE URANIUM, INC**  
412 Walker Bank Bldg, Salt Lake City  
Pres: Wm J Cayias  
VP & Gen Mgr: Jack C Turner  
Sec-Treas: K L Roth  
LARK #8 MINE, Moab, Bull Canyon, undergr, U<sub>3</sub>O<sub>8</sub>, V  
Undergr production  
(Merged into Federal Uranium Corp)
- KENECOTT COPPER CORP UTAH COPPER DIVISION**  
Box 1650, Salt Lake City 10  
Gen Mgr, West Mng Div: J P Caulfield  
Gen Mgr, Utah Copper Div: L F Pett  
Asst Gen Mgr: F C Green  
Gen Supt, Oper: J C Landenberger, Jr  
Dir Ind Rel: D C Houston  
Dir Lab Rel: D O Olsen  
Dir Pub Rel: N W Aldrich  
Saf Engr: Ray Gough  
Div Compt: J P O'Keefe  
Asst to Div Compt: L J Farrer  
Adm Acct: O C Madsen  
Ch Mine Acct: S W Jacques  
Ch Mill Acct: C R Brooks  
Storekeeper Mills: G H Kavanagh  
Storekeeper Mine: A J Boberg  
Ch Refinery Acct: H L Erickson  
Ch Engr: G A Parker  
Mast Mech Mine: G W Bolman  
Ten Mast Mech Mills: A J Fitzgerald  
Mast Mech Mills: L Baldee  
Traffic Mgr: F B Merrill  
CENTRAL POWER STATION, Garfield  
Ch Engr: H P Early  
MILLS ORE HAULAGE, Garfield  
Supt: L S Hills  
BINGHAM MINE, Bingham Canyon  
Mine Supt: V S Barlow  
Asst Mine Supts: J A Norden, Jr & E C Simkins  
Empl Dir: L O Hamlin  
Safety Engr: Ross Pino  
MAGNA SELEC FLOT MILL & ARTHUR SELEC FLOT MILL, Garfield  
Gen Supt: P H Ensign  
Supt, Magna: John Allan  
Asst Supt, Magna: T Barker, Jr  
Supt, Arthur: C G Quigley  
Asst Supt, Arthur: F M Barton  
Empl Dir: M A Moffat  
Ch Elec Engr: R J Corfield  
Safety Engr: R I Erickson  
Ch Met Engr: A G Johnson  
Ch Anal Chem: V A Fraser  
UTAH REFINERY, Garfield  
Supt: H A Shaw  
Asst Supt: K H Koropp  
Met Engr: C A Zeldin  
Plant Elec: I G Salisbury  
Mast Mech: R F Johnson  
GARFIELD WATER CO & GARFIELD IMPROVEMENT CO, Garfield  
Supt: C R Naylor  
(See Ariz, Nev, New Mex, N Y)
- KENTUCKY-UTAH MNG CORP**  
(See Federal Uranium Corp)
- KING MIDAS URANIUM CO**  
Beason Bldg, Salt Lake City  
Pres: John T Sullivan  
VP: Willard Johnson  
Sec-Treas: Karl Weiler  
PROP, Monument Valley, White Canyon, Dark Canyon areas, San Juan Co, U<sub>3</sub>O<sub>8</sub>  
Explor work
- LA SAL MNG & DEVEL CO**  
100 Bush St, San Francisco 4, Calif  
Pres: Donald H McLaughlin  
VPs: J W Swent, Guy N Borge  
Sec-Treas: John W Hamilton  
PROP, U<sub>3</sub>O<sub>8</sub>  
Moab  
Explor Engr: Paul C Henshaw  
(See Homestake Mng Co)
- LAVERDER URANIUM CORP**  
506 Judge Bldg, Salt Lake City  
Pres: George E Bristwell  
VP: Stanley M Perkins  
Sec-Treas: Oscar C Karass  
URANIUM PROP, Indian Creek dist, San Juan Co  
Explor work
- LEAD PRINCE**  
162 S 6th East, Salt Lake City
- Owner: Royal Ute M Co  
Sec-Treas: A R W Hintze  
LEAD PRINCE MINE, Tooele Co, Ag, Pb  
Idle
- LIBERTY URANIUM CORP**  
402 Darling Bldg, Salt Lake City  
Pres: Arthur J Peterson  
VP: Richard A Griffiths  
Sec-Treas: A Kasteler  
Explor
- LISBON URANIUM CORP**  
42 W Broadway, Salt Lake City  
Pres: A F Kibbe  
VP: Eric C Ryberg  
Treas: E R Dumke, Jr  
EXPLORATION, Big Indian dist, San Juan Co, U<sub>3</sub>O<sub>8</sub>, V
- LISBON VALLEY URANIUM CORP**  
Newhouse Bldg, Salt Lake City  
Pres: Kent Johnson  
VP: Elmer K Aagaard  
Sec: Lewis J Stilson  
Treas: Carl E Fischer  
CLAIMS, Colorado Plateau, U<sub>3</sub>O<sub>8</sub>  
Under devel
- LITTLE BEAVER MNG CO, INC**  
100 Bush St, San Francisco 4, Calif  
Pres: Donald H McLaughlin  
VPs: J W Swent, Guy N Borge  
Sec-Treas: John W Hamilton  
PROP, U<sub>3</sub>O<sub>8</sub>  
Moab  
Explor Geol: Paul C Henshaw  
(See Homestake Mng Co)
- MAC FOSTER URANIUM, INC**  
429 Ness Bldg, Salt Lake City  
Pres & Gen Mgr: L O Gardner  
VP: Nephi Foster  
Sec-Treas: F L Maxwell  
CLAIMS, White Canyon, U<sub>3</sub>O<sub>8</sub>  
Under devel
- MAMMOTH MNG CO**  
Mammoth  
Pres: E S McIntyre  
MINE, Tintic dist, Juab Co, Ag, Au, Pb, Cu
- MAYDAY URANIUM CO, INC**  
103 Harver Bldg, Salt Lake City  
Pres: Max Smolik  
VP: Bert Christenson  
Sec: Moyle Sorenson  
Treas: Wm H Hull  
MAYDAY MINE, Beaver, U<sub>3</sub>O<sub>8</sub>  
Idle
- McFARLAND & HULLINGER**  
Box 238, Tooele  
OPHR UNIT, Tooele Co, Au, Ag, Pb, Cu, Zn  
MAYBE MINE, R 4 Canyon, White Canyon dist, San Juan Co, U<sub>3</sub>O<sub>8</sub>, V  
Under devel  
(See Ariz)
- MICHIGAN UTAH CONSOL MINES CO**  
417 Beason Bldg, Salt Lake City 1  
Pres: De Witt Van Evers  
Sec-Treas: Rymier Van Evers
- MINERALS ENGINEERING CO**  
(See Salt Lake Tungsten Co)
- MOAB DRILLING CO**  
Box 387, Moab  
Pres: Charles Steen
- MOAB URANIUM CO**  
2 Arches Bldg, Moab  
Pres: Jos Nejr  
Exec VP: C M Hickman  
Sec: James W Deane  
Treas: Wm Coleman  
Geol: Robert Norman & Wm Owen  
MATCHLESS #3, EAGLE NEXT MINE, Montezuma Canyon, U<sub>3</sub>O<sub>8</sub>  
Under devel  
JIM WADE MINE, San Juan Co, U<sub>3</sub>O<sub>8</sub>, V  
JUNCTION #2, Grand Co, U<sub>3</sub>O<sub>8</sub>, V  
Under devel
- MOKI SYNDICATE**  
Monticello  
URANIUM PROP, 27 mi NW of Monticello  
Under devel
- MONARCH URANIUM CO**  
Salt Lake City  
Pres: Harley J Corleissen  
828 E Center, Provo  
VP: Arthur H Nielson

Sec: J. L. Guiver  
Treas: E. R. Penrose  
**URANIUM PROP.**, Temple Mtn  
dist, Emery Co  
Under devel

**MONO-KEARSARGE MNG CO**  
209 Atlas Bldg, Salt Lake City  
**URANIUM PROP.**, Indian Cr dist,  
San Juan Co  
Explor

**MORENO-CRIPPLE CR CORP**  
405 Interstate Trust Bldg,  
Denver 2, Colo  
Pres & Gen Mgr: R. A. Bennett  
VP: H. W. Baisley  
PROPERTIES, Moab, U<sub>3</sub>O<sub>8</sub>, V  
Under devel

**THE MOSS COPPER MNG CO**  
Box 111, No. 8 W Center St, Provo  
Pres: Carl J. Harris  
VP & Gen Mgr: Joseph Hafon  
Sec: Leon Newsum  
**BIG INDIAN COPPER MINE**, 10 mi  
S of La Sal, undergr, U<sub>3</sub>O<sub>8</sub>  
Under devel

**MOUNTAIN VALLEY  
URANIUM CORP**  
1st Nat'l Bank Bldg, Price  
Pres & Gen Mgr: Floyd G. Adams  
VP: Fred T. Jones  
Sec-Treas: Wm F. Reeves  
MINE, Hite, U<sub>3</sub>O<sub>8</sub>  
Asst Gen Mgr: Francis Scartozina  
Explor

**MOUNT PEALE URANIUM  
CORP**  
343 S State St, Salt Lake City  
Pres & Gen Mgr: Elmer Strand  
VP: P. Guy Wilson  
Sec-Treas & Geol: Jim E. Jinks  
CLAIMS, Big Indian dist, U<sub>3</sub>O<sub>8</sub>, V  
Under devel

**MT VIEW MINING CO**  
818 Kearns Bldg, Salt Lake  
City  
Sec: Ram Warburton  
**MT VIEW GROUP**, Utah Co, Ag,  
Au, Pb, Zn  
(Lessed)

**NATIONAL LEAD CO**  
111 Broadway, New York 6, NY  
Pres: Joseph A. Martino  
Sec: John B. Henrich  
Treas: Joseph J. Morsman  
**URANIUM PROP.**, Big Indian dist,  
also Wayne Co  
Explor

**NAT'L URANIUM CORP**  
39 Broadway, New York 6,  
New York  
Pres: Martin Lasher  
VP: Irving Strauss  
Sec: F. V. Frankel  
Treas: Max Grossman  
Purch Agt: Martin Lasher  
CLAIMS, Henry Mtn area, U<sub>3</sub>O<sub>8</sub>, V  
Gen Mgr: Robert M. Denning  
Geol: Frank B. Wicks, Louis P.  
Gaggini, Wayne Roberts  
Surface production

**NEW ECLIPSE, LUCKY  
THREE #1, 2**  
Owners: Walter W. Smith, Vergil  
C. Fox, Gerald E. Detar &  
Alex M. Steward  
561 Highland Dr, Salt Lake City  
MINES, Tooele Co, Ag, Pb  
Idle

**NEW JERSEY ZINC CO, THE**  
165 Front St, New York, N Y  
**URANIUM EXPLOR.**  
(See Colo, N J, New Mex, N Y,  
Wisc)

**NEW PARK MINING CO**  
901 Walker Bank Bldg, Salt  
Lake City  
Pres & Gen Mgr: W. H. Crammer  
VP: Clark L. Wilson  
Sec: Robert L. Crammer  
Treas: R. C. Wilson  
Purch Agt: Carl D. Harper  
MINE, Kootley, undergr, Au, Cu,  
Pb, Sn  
Gen Supt: Wm Harrison  
Mine Foreman: Wm A. Blair  
Prod: 250 tons  
(See Idaho)

**NEWMONT EXPLOR CO**  
(SUBSID OF NEWMONT MINING CO)  
Pres: F. M. Mendenhall  
Geol: Al. Norman, Montrose, Colo

**URANIUM PROP.**, Montezuma Cr  
area of San Juan Co  
Explor  
(See N Y)

**NEW WORLD EXPLOR,  
RESEARCH & DEVEL CORP**  
9547 Aqueduct Ave, Van Nuys,  
Calif  
**EMPEY MINE**, St George, undergr,  
U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Calif, Colo)

**NIXON URANIUM CORP**  
Box E, Green River  
**URANIUM EXPLOR**

**NORTH STAR METAL MINES,  
INC**  
Milford  
Gen Mgr: Gottfried Peterson  
MINE, undergr, surface, Cu, Au,  
Ag

**OL JATO URANIUM CO**  
114 Atlas Bldg, Salt Lake City  
Pres & Gen Mgr: Max K. Mangum  
VP: Owen W. Bunker  
Sec-Treas: Karl F. Buell  
**WHIRLWIND MINE**, undergr, U<sub>3</sub>O<sub>8</sub>  
Blanding  
Gen Supt: Calvin Black  
Geol: Leland Walker

**OPHIR DEVELOP CO**  
Ophir  
Pres & Mgr: D. C. Gilbert  
MINE, Ophir, Cu, Pb, Zn, Ag  
Under devel  
(Lessed to U S Smelting, Refining  
& Mng Co)

**PAGE MINE**  
Owner: Duke Page, Spanish Fork  
Oper: D. J. Garrick, 440 S 6th East,  
Provo  
MINE, Juab Co, Ag, Pb

**PAN AMERICAN URANIUM  
CORP**  
Houston, Texas  
Pres: M. A. S. Makris  
**URANIUM PROP**  
Explor

**PENROSE URANIUM CO**  
701 Midland Savings Bldg, Denver,  
Colo  
Pres: F. N. Bosco  
CLAIMS, various parts Utah

**PIONEER URANIUM CORP**  
Box 458, Moab  
Pres: Dan O'Laurie  
VP: R. M. Barrett  
Sec-Treas: Allen P. Darby  
Mgr: Fred Frazier  
Field Supt: O. T. Harrison  
**ZELLA MINE**, undergr, U<sub>3</sub>O<sub>8</sub>  
Mine Supt: Jos. Wheeler  
Under devel

**PIUTE URANIUM CORP**  
39 Exchange Bldg, Salt Lake  
City  
Pres: F. H. Hunt  
VP & Mgr: H. E. Havenor  
Sec: D. H. Bullough  
Treas: D. H. Bullough  
**JEPSTER MINE**, Marysville,  
undergr, U<sub>3</sub>O<sub>8</sub>  
PROPERTIES, Beaver Co, Pb,  
Zn

**PLATEAU MNG CO**  
Moab  
Supt: Melvin C. Bowles  
**U S TREASURY, PROTECTION,  
CARROL B, LITTLE DEVIL MINES**,  
undergr, U<sub>3</sub>O<sub>8</sub>, V  
Undergr prod

**PLUTUS MNG CO**  
608 Dooly Bldg, Salt Lake  
City  
MINE, Tropic dist, Juab Co, Ag,  
Au, Pb, Cu  
Under devel

**RAINBOW GOLD MINES  
CORP OF DELAWARE**  
Marysville  
Pres: Louis C. Delake  
**COPPER BELT MINE**, Piute Co,  
Au, Ag, Cu  
Under devel

**RARE METALS CORP OF  
AMERICA**  
818 Kearns Bldg, Salt Lake  
City  
Pres: Paul Kayser  
VP & Gen Mgr: C. L. Perkins  
Asst Gen Mgr: M. H. Kline

Mining Engr: E. J. Carlson &  
A. A. McKinney  
Office Mgr: H. Anne Kidd  
Chem: R. Kronstadt  
**URANIUM-VANADIUM PROP.**,  
Grand, Wayne & Emery Co  
(See Ariz, Idaho)

**RAVEN MNG CO OF UTAH**  
Roosevelt  
Pres & Gen Mgr: F. C. Ferron  
VP & Gen Supt: R. A. Ferron  
**PARLETTE MINE**, 12 mi S of  
Mylon, undergr, glauconite  
Foreman: Ralph McMullin  
**E R MINE**, 45 mi SE of Vernal,  
undergr, glauconite  
Foreman: Richard O'Neil

**REALTY COMPANY, THE**  
937 Nat'l Bank Bldg, Denver 2,  
Colo  
Pres: Chandler Weaver  
VP: Gen Mgr: Ray A. Bennett  
VP: L. D. Allen  
**LUCKY STRIKE MINES**, #1-#10,  
Henry Mtn, Garfield Co,  
undergr, U, V  
Supt: Harold Ekker  
Prod: 29 tons  
(See Colo)

**RED-CANYON MINES**  
Owner: Red Canyon Mines Partnership,  
Donald T. Adams, Preston  
Bedd, Oso Hunt & J. Wiley Redd  
MINES, San Juan Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

**RED FRY MNG CO**  
Box 57, Monticello  
Pres: E. J. Hall  
VP: K. P. Bailey, Jr  
Sec: Milton Nickols  
Treas: Arlow L. Freestone  
**MAYBE MINE**, Red Canyon, San Juan  
Co, U<sub>3</sub>O<sub>8</sub>  
Lessee: McFarland & Hullinger  
Undergr prod

**ROCKY MOUNTAIN URANIUM  
CORP**  
1320 Cont Bank Bldg, Salt Lake  
City  
Pres: Critchell Parsons  
VP: Herman H. Lewis  
Sec: Clarence J. Spangler  
Treas: Gene W. Hewett  
Gen Mgr: Critchell Parsons  
**RAINY DAY CLAIMS**, Circle Cliffs  
area, Wayne Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

**ROYAL URANIUM CO, INC**  
2899 Bryan Ave, Salt Lake City  
Pres: George H. Patterson  
VP: Robert T. Dunsmore  
Sec: Mark D. Eggerston  
CLAIMS, Temple Mtn dist, Emery  
Co, U<sub>3</sub>O<sub>8</sub>  
Under devel

**SABRE URANIUM CORP**  
Box 1549, Grand Junction, Colo  
CLAIMS, San Rafael dist, Emery  
Co, U<sub>3</sub>O<sub>8</sub>  
Under devel  
(See Colo, New Mex)

**SALT LAKE TUNGSTEN CO,  
THE**  
2149 Indiana Ave, Salt Lake City  
Pres: Blair Burwell  
VP: John W. Merrill  
Sec-Treas: J. E. McFarr  
Purch Agt: E. W. Isham  
**TUNGSTEN REFINERY**, "Synthetic  
Schellite"  
Supt: B. T. Burwell  
Asst Supt: E. O. Torferson

**SAN FRANCISCO CHEM CO**  
Dr. F. Montpelier, Idaho  
Supt, Undergr Mines: John S. Wright  
**ANCHERREE MINE**, NE of Randolph,  
phosphate rock  
**EMMA MINE**, Rich Co  
(See Ida)

**SAN JUAN URANIUM  
EXPLOR CO**  
Moab  
**FAULT CLAIMS**, Yellow Circle  
dist, near Moab, U<sub>3</sub>O<sub>8</sub>, V

**SECURITY URANIUM  
SERVICE, INC**  
280 N University Ave, Provo;  
Box 648, Moab  
Pres: G. W. McLennan  
VP: Thomas J. Norton  
Sec: Lem M. Frasier  
Treas: Arthur J. Zaborski

**SHAMROCK URANIUM, INC**  
99 Atlas Bldg, Salt Lake City  
Pres: Thomas C. Gensford  
VP: Harold Mortensen  
Sec-Treas: W. M. Barcloux  
Purch Agt: J. A. Chrysler  
CLAIMS, Grand & San Juan Co,  
U<sub>3</sub>O<sub>8</sub>  
Gen Mgr: J. A. Chrysler  
Under devel

**SHEBA URANIUM MNG &  
EXPLOR, INC**  
513 Kiesel Bldg, Ogden  
Pres & Gen Mgr: A. E. Witt  
VP: D. J. Nelson  
Sec: Jean Means  
**DONAJEAN MINE**, 35 mi SW of  
Moab, undergr, U<sub>3</sub>O<sub>8</sub>  
Geol: Geo. Ryan (Logan)  
Under devel

**SHOOTING CR MNG  
CORP**  
Home Office: Huff Bldg,  
Greensburg, Penn  
Field Office: Box 191, Richfield  
Pres: John A. Robertshaw  
**URANIUM-VANADIUM PROP.**  
Henry Mtn dist  
Producing

**SHUMWAY URANIUM MNG  
CORP**  
E 4th S, Salt Lake City  
Pres: Trent J. Parker  
VP: Walter B. Shumway  
Oper VP: Harold E. Shumway  
Treas: Wm F. Dickson  
**EAST RIM, KING, WOODEN SHOE,  
BRADFORD #9 MINES**  
Blanding  
Mine Supt: Eugene Shumway  
Under devel

**SILVER BUCKLE MINING CO**  
904 Walker Bank Bldg, Salt Lake  
City  
Pres: F. E. Scott  
VP: Jack D. Gay  
Sec: Aiden Hall  
Treas: Jack D. Gay  
Gen Mgr: Gale Hanson  
**URANIUM PROP.**, Big Indian dist,  
San Juan Co  
Explor  
(See Idaho)

**SILVER HORN MINING CO**  
1024 1st Ave, Salt Lake City 3  
Pres: W. H. Sprunt  
Gen Mgr: L. B. Glafcke  
MINE, undergr, surface, Au, Ag,  
Cu, Pb

**SILVER STAR MINES**  
510 Bank St, Wallace, Idaho  
Pres: M. D. Anderson  
Sec: V. C. Kingsburg  
CLAIMS, W of Blanding, U<sub>3</sub>O<sub>8</sub>  
Explor  
(See Idaho)

**J R SIMPLOT CO, INC**  
Pocatello, Idaho  
Gen Mgr: George McHugh  
**PHOSPHATE MINE**, Rich Co  
(See Idaho)

**SPIDER URANIUM MNG CO,  
INC**  
630 Eccles Bldg, Ogden  
Pres: Earl J. Scherer (Keno, Ore)  
VP: Wm. E. Westergard (Pocatello,  
Idaho)  
Sec: Frank H. Poelking  
CLAIMS, Juab Co, undergr, WO<sub>3</sub>,  
U<sub>3</sub>O<sub>8</sub>  
Geol: Ralph S. Gray  
Under devel

**STANDARD URANIUM CORP.**  
Box 445, Moab  
Pres: Charles A. Steen  
VP & Gen Mgr: Wm. R. McCormick  
Sec-Treas: I. Newton Brown  
Gen Supt: Robert B. Durr  
Purch Agt: James B. King, Jr  
**BIG BUCK MINE**, Big Indian dist,  
San Juan Co, U<sub>3</sub>O<sub>8</sub>, V  
Mine Foreman: Ross Eddington  
Undergr production

**STAR DUST MINES, INC**  
488 Hess Bldg, Salt Lake City  
Pres & Gen Mgr: Fred Cook  
VP: Blake Probert  
Sec: F. L. Maxwell  
Gen Mgr, Stone Div: Ralph  
Maxwell  
**STAR DUST MINE**, WO<sub>3</sub>  
Bapch  
Gen Supt, Mines: Kenneth Smivaley



**STEWART URANIUM**

**DRILLING CO., INC.**  
Box 534, Monticello  
Pres: M R Stewart  
VP: D W Stewart  
Sec: H A Reid, Jr  
MINE,  $U_3O_8$   
Under devel

**SUNNYSIDE URANIUM CO**

Marysville  
Gen Mgr: Lane J Bertelsen  
BUDDY MINE, 5 mi NE of  
Marysville, undergr, U  
Under devel

**TEMPLE MOUNTAIN**

**URANIUM CO**  
39 Exchange Place, Salt Lake  
City  
Pres: Herman Heinicke  
VP: Geo Heinicke  
Sec-Treas: Augustus Reeves  
CLAIMS, Green River, Torrey,  
undergr, surface,  $U_3O_8$ , Ag, Pb  
Under devel

**THORNBURG MNG CO**

160 W Main St, Grand Junction,  
Colo  
SEVEN MILE MINE, Moab,  $U_3O_8$   
(See Colo)

**THREE STATES URANIUM**

**CORP**  
c/o Clyde Johnson, Vernal  
LONG SHOT GROUP, BLUE BIRD  
GP, LUCKY CECIL, Garfield Co,  
 $U_3O_8$ , V  
Under devel  
JIMMY BOY GROUP, San Juan Co,  
 $U_3O_8$ , V  
Under devel  
(See Colo)

**THUNDERBIRD URANIUM CO**

40 N 3rd St W, Salt Lake City 10  
Pres: Robert W Elliott  
VP: C D Craddock  
Sec: Robert W Miller  
THUNDERBIRD MINE, undergr,  
 $U_3O_8$ , V  
Under devel  
Gen Mgr: Ross A Musselman  
Geol: Mason Rankin  
Mine Supt: C F Justiss  
Mine Engr: Mike Keeley  
Under devel

**TIMCO URANIUM, INC**

419 Ness Bldg, Salt Lake City  
Pres: C A Schettler  
Sec-Treas: F L Maxwell  
URANIUM PROPERTIES, San Juan  
Co  
White Canyon  
Gen Mgr: L D Gardner  
Gen Supt: Robert Silva  
TUNGSTEN PROPERTIES,  
Tooele Co  
Under devel

**TINTIC LEAD CO**

39 Exchange Place, Salt Lake  
City  
Pres: P H Hunt  
Sec-Treas: D H Bulough  
MINE, Milford, Au, Ag, Pb  
(Leased)

**TINTIC STANDARD MNG CO**

114 Walker Bank Bldg, Salt Lake  
City  
Pres: H E Raddatz  
Treas: & Gen Mgr: M D Paine  
Sec: Glen Hardy  
Engr-Geol: Fred W Hanson  
TINTIC STANDARD IRON BLOSSOM  
MINES, Divided, undergr, Au, Ag,  
Cu, Pb, CaF<sub>2</sub>  
COUGAR MINE, 36 mi NW of Lund,  
undergr, Pb, Ag, Cu, Au, CaF<sub>2</sub>  
Idle

**TRANS-WESTERN URANIUM**

**CORP**  
412 Ness Bldg, Salt Lake City  
Pres: Paul S Dixon  
VP: Virgil V Peterson  
Field Super: Sherman D Gardner

**TREASURE HILL MINES CO**

510 Felt Bldg, Salt Lake City  
Pres: Dan T Moyle  
VP: Dr Dean K Christensen  
Sec & Gen Mgr: G Dwight Wakefield  
Gen Supt: Frank D Saylor  
TREASURE HILL MINE, 9 mi SE of  
Stockton, Au, Ag, Cu, Pb  
Idle

**TRIANGLE URANIUM CORP**

2460 Kiesel Ave, Ogden

Pres: Geo T Sugihara  
WIND-RIVER #1, undergr,  $U_3O_8$   
Gen Mgr: Donald G Oliver

**TRIPLE D URANIUM CORP**

Box E, Green River  
YELLOW QUEEN, BLUE GOOSE  
PROP,  $U_3O_8$

**TRI-STATE MINERALS CO**

(SUBSID OF SOUTHERN  
CALIF MINERALS CO)  
Ogden  
50-TON ROLLER-AIR FLOAT  
MILL  
Gen Mgr: John R Pynen  
(See Tri-State Minerals, Mont; So  
Calif Minerals, Calif)

**TUSHAR GROUP (SHAMROCK)**

924 Harrison Ave, Redwood City,  
California  
Owner: The Tushar Mines, Inc  
Pres: C E Sherman  
Oper: R A Glenn, 704 Newhouse,  
Salt Lake City  
TUSHAR GROUP MINE, Piute Co,  
Ag, Cu

**ULA URANIUM, INC**

506 Griff States Bldg, Dallas, Tex  
Pres: A W Hutchings  
VP: E C Raines  
Sec-Treas: R C Clarke  
ULA #1, #2 MINES, White Canyon,  
undergr,  $U_3O_8$   
Gen Mgr: Harry Marsh  
Geol: Wm T Davis

**UNITED MINERALS CORP**

518 Felt Bldg, Salt Lake City  
Pres & Gen Mgr: G W Snyder, Jr  
VPs: G W Snyder, H A Covey &  
H C Olson  
Sec: Guy Snyder  
Purch Agt: M Diehl  
Geol: M C Godbe III  
Ch Engr: H A Covey  
(See Ariz, Idaho & Nev)

**UNITED MINING & DEVEL**

**CO**  
Salt Lake City  
Pres: O H Evans  
IDA, DESERT VIEW, BLACKJACK  
MINES & SIMPSON MT MINES,  
Erickson dist, Au, Ag, Pb, Zn,  
Mn, Cd  
Supt: Jack Morse  
50-TON GRAV MILL

**UNITED PARK CITY MINES**

**CO**  
819 Kearns Bldg, Salt Lake City  
Pres: John M Wallace  
VP: Frank A Wardlaw, Jr  
Sec-Treas: J Wm Stoner  
MINES, Heber, undergr, Pb, Zn,  
Ag, Au, Cu  
Gen Mgr: S K Droubay  
Gen Supt: G W DeLaMare  
Prod: 250 tons  
FLOT MILL, Park City

**UNITED STATES GYPSUM**

**CO**  
GYPSUM MINE, Nephi, undergr  
GYPSUM MINE, Sigurd, surface  
(See Calif, Conn, Ill, Iowa, Mich,  
Mont, New Mex, Nev, Okla, Tex,  
Va, Wash)

**UNITED STATES SMELTING,**

**REFINING & MINING CO**  
WESTERN OPERATIONS  
Newhouse Bldg (Box 1980), Salt  
Lake City 10  
VP & Gen Mgr, West Oper:  
O A Giesler

Mgr, West Mines: A G Kirkland  
Asst to Mgr, West Mines: Max M  
DuBois  
Mgr, Midvale Pl: H L Johnson  
VP & Ch Geol: R N Hunt  
Indus Devel Dir: J M Ehrhron  
Engr, West Oper: Boris Ashurkoff

**UTAH OPERATIONS**

U S & LARK MINE, Bingham dist,  
Pb, Zn, Cu  
Gen Supt: Benton Boyd  
Supt, U S Sec: John Holmes  
Supt, Lark Sec: Harold Wells  
MIDVALE PL, FLOT MILL &  
LEAD SMELT  
Gen Supt: C A Nelson  
Mill Supt: A A Nelson  
(See Alaska, Ariz, Mass, New Mex)

**U S STEEL CORP**

COLUMBIA-GENEVA DIV  
Russ Bldg, San Francisco, Calif  
VP & Mgr: L J Westhaver  
Gen Supt: L F Black

BLAST FURNACE, Geneva, near  
Provo  
(See Ala, Mich, Minn, Mont, Penn,  
Tenn)

**U S URANIUM CORP**

402 Darling Bldg, Salt Lake City  
Pres: E M Ludlow  
Sec-Treas: Jesse G Jackson  
PROPERTIES, Temple Mt dist,  
Emery Co,  $U_3O_8$ , V  
Gen Mgr: L E Stein

**UNIVERSAL URANIUM &**

**MLG CORP**  
Moab  
Pres & Gen Mgr: Kent Johnson  
VP: Elmer K Aagaard  
Mine Supt: J Lewis Stilson  
Geol: H K Thurber, Jr  
Met: Earl Smith  
MINERAL #7 MINE, Mineral  
Canyon, undergr, surface  
Under devel  
GRAV-FLOT MILL

**URAINBOW, INC**

908 Kearns Bldg, Salt Lake City

**URANIUM, INC**

412 Walker Bank Bldg, Salt Lake  
City  
Pres: Ralph B Ottenheimer  
VP: Wm Zoumadakis  
Sec-Treas: Max A Mower  
LARK #7, SLICK ROCK MINES,  
Moab, undergr,  $U_3O_8$   
Gen Mgr: Jack C Turner  
Undergr production  
Mine Supt: Joe Dowd  
(Merged into Urida Uranium, Inc)

**URANIUM INDUSTRIES, INC**

Box 422, Green River  
Pres: K S Mitty  
VP: S J Auringer  
Sec: G M Douglas  
Treas: R C Brown  
Engr: R L Wright  
VANADIUM KING #1, undergr,  $U_3O_8$   
Producing

**URANIUM KING CORP**

423 Ness Bldg, Salt Lake City  
Pres: George H Taylor  
BIG BEND MINE, undergr,  $U_3O_8$   
Idle  
Gen Mgr: Jos F Sherman  
Under devel

**URANIUM PARK BRIGHTON**

**MINES CO**  
Box 37, Provo  
Pres & Gen Mgr: Richard Knight  
VP: J Clyde Buchler  
Sec-Treas: Stanley H Heal  
MINES, White Canyon,  $U_3O_8$ ,  
undergr  
Mine Supt: Floyd Bleak  
Under devel

**UTAH ALLOY ORES, INC**

Room 514, 101 N High Street  
N Columbus, Ohio  
YELLOW CAT AREA, Grand Co  
URANIUM-VANADIUM PROP  
Producing

**UTAH & IDAHO URANIUM,**

**INC**  
Kellogg, Idaho  
RADON CLAIMS, Big Indian dist,  
San Juan Co, operating contract  
with Hecla Mng Co,  $U_3O_8$   
Under devel  
HOT ROCK CLAIMS, San Juan Co,  
 $U_3O_8$   
(Stock held by Federal Uranium  
Corp)

**UTAH CONSTR CO**

142 E 3rd St, Salt Lake City  
VP: E W Littlefield  
EXCELSIOR IRON MINE, Iron  
Springs dist, Iron Co, Fe  
KEELEY MINE, Iron Springs dist  
(See Calif)

**UTAH MERCER GOLD MNG**

**& MLG CO**  
Lehi  
Pres: Chas Mercer  
MINE, American Fork Canyon,  
undergr, Au, Ag, graphite  
Under devel

**UTAH MINE COMPANY**

41 E So Temple St, Salt Lake  
City  
Pres: Henry D Moyle  
Sec: Joseph L Wirthlin  
UTAH MINE GROUP, Fish Springs  
dist, SW of Salt Lake City, undergr.

**Ag, Pb, Au**

Idle  
(Leased to John E Fritch, Park City)

**UTAH ORE SAMPLING CO**

Box 217, Murray  
Pres: J Wm Knight  
VP: E G Jensen  
Sec-Treas: R E Allen  
Gen Mgr: Arnold Herlin  
CUSTOM SAMPLING MILL  
Mill Supt: L A Walters  
Mill Foreman: J T Johnson

**UTAH URANIUM CORP**

1102 Walker Bank Bldg, Salt  
Lake City  
Pres: Darrell G Hafen  
VP & Gen Mgr: Arthur F Crosby  
Sec: Wallace R Bennett  
BLOOMINGTON & SNYDER MINES,  
St George, undergr,  $U_3O_8$ , Cu  
Geol: E Poshman  
Under devel

**UTAH VERNAL OIL &**

**URANIUM CO, LTD**  
39 Exchange Place, Salt Lake City  
Pres: Geo B Stuart

**UTAH-APEX URANIUM CO,**

**INC**  
723 Judge Bldg, Salt Lake City  
Pres: W L Gardner  
VP: Lefroy Johnson  
Sec-Treas: M K Snow  
MINES, Beaver Co,  $U_3O_8$   
Under devel

**UTEX EXPLOR CO, INC**

Box 432, Moab  
Pres: Charles A Steen  
VP: W T Hudson  
Sec: Mitchell Melich  
Treas: Rosellie Shumaker  
Purch Agt: Bill Lewis  
MI VIDA MINE, 38 mi SE of  
Moab, undergr,  $U_3O_8$   
Mine Supt: Virgil Bujeu  
Mine Engr: Harold Hilburn  
Met: Clem Chase  
Assay: Lauren Ball  
Producing

**UTIDA URANIUM, INC**

Moab  
Pres & Gen Mgr: Jack Turner  
(Merged into Federal Uranium  
Corp)

**VANADIUM CORP OF AMER**

Marysville  
Gen Mgr: D W Viles, Durango, Colo  
PROSPECTOR & FREEDOM MINES,  
Marysville, undergr, U  
Mine Supt: R L Anderson  
Asst Mine Supt: Wm Witzmeyer  
Producing  
(See Ariz, Colo, New Mex, N Y)

**VITRO URANIUM CO**

(A DIV OF VITRO CORP OF  
AMER)  
609 W 33 St, Salt Lake City  
Pres: J C Ward  
Exec VP: G White  
Sec: W H Denne  
Treas: R T Ruder  
Gen Mgr: W B Hall  
Purch Agt: C A Theobald  
MINE, Green River, undergr,  $U_3O_8$ ,  
Under devel  
HYDROMETALLURGICAL PL.  
Pl Mgr: R C Cole  
Mill Supt: M T Ellis  
(See Wyo)

**WEST PARK MINING CO**

Box 466, Provo  
Pres: J H Peterson  
VP: O W Johnson  
Sec & Purch Agt: Dean W Payne  
WEST PARK MINE, 2 mi S of  
Brighton & 8 mi NW of Midway,  
undergr, Cu, Au, Ag  
Gen Mgr: Arvil H Scott  
Geol: E A Hewitt  
Prod: 8 tons

**WESTERN GOLD &**

**URANIUM, INC**  
Box 27, Leeds  
Pres: Ralph G Brown  
VP: David P Shira  
Sec: Berene Bachus  
Gen Supt: Harris B Salisbury  
Geol: Richard V Wyman  
Met: Alan Kiscock  
SILVER REEF MINE, 2 mi NW of  
Leeds, undergr,  $U_3O_8$ , V, Ag, Cu  
Under devel

**WESTERN GYPSUM CO**

314 Dooly Bldg, Salt Lake City

Pres: S H Eliason  
VP: W S Mole  
**MINE, WESTERN GYPSUM, Sigurd,**  
surface, gypsum  
Mine Supt: Ed Flinn  
Prod: 400 tons

# **WESTERN MIN DEVEL & MFG CO**

Albion, Idaho  
ALSTEEN #1, Horseshoe Canyon,  
Montezuma dist, U<sub>2</sub>O<sub>3</sub>  
Gen Mgr: Max Dalton  
Gen Supt: Glen Cash  
Mech Engr: Geo Wright  
Producing

# **WHELCHEL MINES CO**

Caldwell, Idaho  
CLAIMS, Green River, U<sub>2</sub>O<sub>3</sub>  
Explor

# **WHITE CANYON MFG CO**

1133 W McDowell Rd., Phoenix,  
Ariz  
Pres: F A Sifton  
WHITE CANYON #1, HIDEOUT #1,  
FRY #4, NORTH POINT CLAIMS,  
White Canyon, San Juan Co, U<sub>2</sub>O<sub>3</sub>  
Producing

# **WYCO URANIUM, INC**

429 Ness Bldg, Salt Lake City  
Pres: L M Weidinger  
VP: Martin J Feist  
Sec: Clifford N Jarrett  
CLAIMS, Blanding, U<sub>2</sub>O<sub>3</sub>  
Field Mgr: J C Harvey  
Explor

# **YANKEE CONS MINING CO**

818 Kearns Bldg, Salt Lake City  
Sec-Treas: Rom W Burton  
YANKEE MINE, Utah Co, Au, Ag,  
Cu, Pb, Zn  
(Under devel by lessees)

## **VERMONT**

# **APPALACHIAN SULPHIDES, INC**

South Stratford  
Pres: J Cunningham Dunlop  
VP: Walter Woods  
Sec: Philip Baesdale  
Treas: O T H Woodroffe  
Purch Agt: Harold Davis  
ELIZABETH MINE, undergr &  
surface, Cu, Ag  
Gen Mgr: John P Cowley  
Asst Gen Mgr: O B Benson  
Geol: Richard Dweilly  
Elec Engr: Joe T Macley  
Mine Supt: Clinton L Miller  
Asst Mill Supt: Chas F Banker  
Mine Engr: Richard Little  
950-TON FLOT MILL  
Mill Supt: John W Sheedy  
Mill Foreman: Charles L Adolph  
Assay: Robert Summitt

# **EASTERN MAGNESIA TALC CO, INC**

105 Beach St, Burlington  
Pres: E W Magnus  
VP & Gen Mgr: W W Magnus  
Gen Supt: V A Backe  
Engr: L H Durkee  
NO 2 MINE, 3 mi S of Waterbury,  
undergr, talc  
Mine Supt: Maurice G Eastman  
Mine Foreman: Earl Chilton  
Prod: 100 tons  
100-TON DRY GRINDING MILL  
NO 4 MINE, 5 1/3 mi N of  
Johnson, undergr, talc  
Mine & Mill Supt: Roger W Perkins  
Mine Foreman: CHIT Allen  
Prod: 100 tons  
100-TON FLOT-DRY GRINDING  
MILL  
Mill Foreman: Alden Sargent

# **RUBENOID CO, THE**

300 5th Ave, New York, N Y  
VERMONT ASBESTOS MINES DIV  
Hyde Park, surface, chrysotile,  
asbestos  
Gen Mgr: M J Meesol  
Gen Supt: I H Potter  
Mech Engr: J E Matthews  
MINE, Hyde Park  
Supt: W Page  
Asst Supt: R O'Hear  
Engr: John Stewart  
MILL, Lowell, crushing & air  
sep

Supt: Carl White  
Asst Supt: C Wescomb

# **VERMONT MINERAL PRODUCTS, INC**

Chester  
Pres & Gen Mgr: Stanley F Dorand  
Sec: Walter H Austin  
READING QUARRY, Reading,  
surface, micaceous talc  
Mine Supt: Hollis N Corbin  
GRAY MILL  
Mill Foreman: I S Wheeler

# **VERMONT TALC CO**

Chester  
Pres: T A Yager  
Sec: Gilles Blague  
MINE, undergr, talc  
Mine Supt: Frederick De Zaine  
MILL, Chester

## **VIRGINIA**

# **ALLIED CHEM & DYE CORP, GEN CHEM DIV**

Box 389, Galax  
GOSAN MINES, 6 mi N of  
Galax, undergr, pyrrhotite  
Supt: James O Nichols  
Mine Foreman: R F Dillot  
FLOT-GRAY MILL  
Mill Foreman: O W Blauel  
(See Colo, Mo, New Mex, N Y)

# **AMER CYANAMID CO,**

PIGMENTS DIV  
Piney River  
PLANT, ilmenite  
Pl Mgr: J S Carter  
(See Ark, Fla, N Y)

# **CAROLINA MINERALS CO, INC**

Box 415, Bedford  
HARRIS #2, WATSON, JOHNSON  
& SCOT & COX MINES, Bedford  
& Piney River, feldspar, mica  
& quartz  
(See N C)

# **INTERNAT'L MIN & CHEM CORP**

Piney River  
APLITE MINE  
Supt: Claude Ellis  
(See Ariz, Colo, Fla, Ill, Miss,  
New Mex, N Dak, Ohio, S Dak, Tenn)

# **NATIONAL GYPSUM CO**

Kimballton  
MINE & PLANT, undergr, lime-  
stone  
Pl Mgr: Monroe Rule  
Mine Supt: James Huffman  
(See Iowa, Kans, Mich, N Y,  
Ohio, Tex)

# **NEW JERSEY ZINC CO**

Austintown  
BERTHA MINERAL DIV MINE,  
Zn, Pb  
2,000-TON FLOT MILL  
Supt: W L Albers  
(See Colo, New Mex, N Y, Visc, Utah)

# **OLD DOMINION MANGANESE CO, INC**

Star Tannery  
Pres: John B Lewis  
VP: Paul J Bertelson, R C  
Stegmeyer  
Sec: Craig Leonard  
Gen Supt: Trice Carter  
MINERAL RIDGE, 5 mi S of Star  
Tannery, undergr, surface, Mn  
HEAV MEDA MILL, Mineral Ridge

# **REYNOLDS MINING CORP**

Reynolds Metals Bldg,  
Richmond  
Ch of Bd: R S Reynolds  
Pres: Walter L Rice  
VPs: M M Caskie, R S Sherwin,  
R H Ziegler, J Louis Reynolds  
Treas: R S Reynolds, Jr  
Sec: Allyn Dillard  
Ch Geol: John D Moses  
Safety Engr: J E Nichols  
Purch Agt: M W Henry  
(See Calif)

# **TONGRAE MFG CO, INC**

2811 Greenlawn Ave, Waco, Tex,  
Roanoke  
Pres & Gen Mgr: C H Thompson  
VP: W J Durkin  
Sec: Les Howard

Purch Agt: C H Thompson  
TONGRAE #1 MINE, Rt 6,  
Floyd, Va, Cu, Fe  
Supt: R C Harmon  
Asst Supt: Robt Conner  
Foreman: Oscila Pratt  
ROASTING, LEACH & PRECIP  
PLANT

# **U S GYPSUM CO**

Plasterco  
Gen Mgr: H D Decker  
NUMBER SIX MINE, at Plasterco,  
undergr, gypsum  
Mine Supt: R C McNamee  
Mine Foreman: D R Davis  
Prod: 500 tons  
(See Calif, Colo, Conn, Ill, Iowa,  
Mass, Mich, Mont, Nev, N Y,  
Utah, Wash)

# **VIRGINIA-CAROLINA CHEM CO**

Box 1707, Richmond  
Pres: J A Howell  
VP: C E Heinrichs  
(See Fla, Tenn)

## **WASHINGTON**

# **AAVESTAUD, C J & WELLER**

Box 385, Coulee City  
KELLY CAMP MINE, Ferry Co,  
WO<sub>3</sub>

# **ALDER GOLD COPPER CO**

Box 1140, Spokane  
Pres: E Rayce  
VP: Frank Landsburg  
Sec: R K Hagerty  
Treas: Harvey F Stone  
ALDER MINE, Twisp, undergr,  
Au, Cu, Zn  
Idle  
300-TON FLOT MILL  
Met: F A Sharp

# **ALEXANDER MINING CO**

1230 E 89th, Seattle 5  
c/o Alexander J Akishin  
THREE "B" GULCH PROP,  
King Co, Zn, Pb

# **ALPINE URANIUM CORP**

DEER TRAIL DIV  
512 Zions Sav Bank Bldg, Salt  
Lake City, Utah  
DEER TRAIL-TURK MINES,  
undergr, Cu, Ag, Pb, Zn, Co, Ba  
Fruitland  
Gen Mgr: James W Lower  
Gen Supt: Jack K Pierson  
Geol: Richard E Redden  
Mech Engr: James E Gray  
Elec Engr: Dan Stanger  
Plt Concn: Harvey Gray  
Prod: 125 tons  
125-TON FLOT-GRAY MILL  
Assay: A E Stiles

# **AMERICAN GRAPHITE METALS**

Box 123, Yakima  
Pres: A E Painode  
Gen Mgr: E R Thoma  
Supt: F B Satterlee  
MINE, 4 mi NE of Omak, flake  
graphite, Pb, Zn, Ag, Ni  
Idle  
100-TON FLOT-MILL, Omak  
(Lessee: Kaiser-Wagner-Olson  
Partnership, Concnully)

# **AMER SMLTG & REF CO**

Box 89, Colville  
VAN STONE MINE, surface, Zn, Pb  
Supt: P A Lewis  
Mine Foreman: Frank Paparich  
Mine Engr: R J Cole  
Ch Clerk: George Mead  
Asst Clerk: Fred Harding  
1,000-TON FLOT MILL  
Mill Supt: Robt A Blake  
Asst Mill Supt: R K McCalum  
Assayer: Wilson Tooke  
TACOMA SMELTER, Box 1805,  
Tacoma, copper smelter, electroly-  
tic refinery, arsenic refinery &  
acid pl  
Gen Mgr: E H Marble  
Asst Mgr: G E Sigler  
Gen Supt: P T Benson  
Purch Agt: J F Vogel  
(See Ariz, Calif, Colo, Idaho, Kans,  
Md, Mo, Mont, Neb, N J, New Mex,  
N Y, Okla, Tex, Utah)

# **AMER ZINC, LEAD &**

# **SMELTING CO**

927 Old Nat'l Bank Bldg,  
Spokane  
Western Mgr: D I Hayes  
Purch Agt: E F Tharp  
GRANDVIEW MINE, Metaline Falls,  
undergr, Pb, Zn  
Gen Supt: John W Currie  
Mine Supt: C I Sage  
Met: Delos Underwood  
West Geol: H F Mills  
Elec Engr: R A Sheman  
Mine Foreman: Ois Hagberg  
Asst Mine Foreman: Clarence Sage  
Mine Engr: Theodore Becker  
Prod: 850 tons  
850-TON FLOT MILL  
Mill Supt: Homer P March  
(See Amer Zinc-III, Amer Zinc-Tenn,  
Amer Zinc, Mo, Ill, Texas)

# **BEAR CREEK MINES, INC**

Box 308, Port Angeles  
c/o E R Gehlke, Jr  
BEAR CREEK MINE, Clallam Co,  
Mn

# **BEAVER FALLS MINE**

Star Rt 1, Box 32, Port Angeles  
c/o John C Kruger  
BEAVER FALLS MINE, Clallam Co,  
Mn

# **BIG CHIEF & CHLORIDE QUEEN GROUPS**

Colville  
Lessee: A E Tesdahl  
MINE, Stevens Co, Pb, Ag

# **BIG DOME MINING CO**

401 12th Avenue N, Seattle  
Pres: Oscar Johnson  
MINE, Kittitas Co, Cu  
Under devel

# **BONANZA LEAD CO**

Box 111, Colville  
Owners: E B Gibbs, I M Hunley  
BONANZA MINE, Stevens Co,  
Pb, Ag

# **CHESAW MINE**

Suite 318, Larson Bldg, Yakima  
c/o C N Bagwell & Homer B  
Splam  
MINE, Okanogan Co, Au, Ag

# **CHEWALAH COPPER CO**

Chewalah  
Pres: John A Peterson  
VP: J W Gilmore  
Sec: Philip Stok  
Gen Mgr: F H Mitchell  
CHEWALAH COPPER MINE,  
4 1/2 mi NE of Chewalah, unde gr,  
Ag, Cu, Au  
Prod: 200 tons  
200-TON FLOT MILL

# **CONSOL MINES & SMELTING CO, LTD**

Wilbur  
Pres: Hugh Brown  
Sec-Treas: D N Gellatly  
THREE PROPERTIES at Keller,  
Ferry Co, undergr & surface, Cu,  
Mn  
Under devel

# **CRESCENT MINES**

1045 W Spokane St, Seattle  
c/o Mel Lewis, R E Hopper &  
Sam Marsh  
CRESCENT MINE, Clallam Co,  
Mn

# **DAY MINES, INC**

Republic  
ACURUM MINE, undergr, An, Ag  
(See Idaho)

# **DEER LAKE TUNGSTEN MINE**

Box 304, Deer Park  
Mgr: W H West  
MINE, Blue Grouse Mt, undergr,  
surface, WO<sub>3</sub>  
Prod: 25 tons  
25-TON FLOT MILL

# **EAGLE PEAK COPPER MINING CO**

Spokane  
Pres: R H Wheelock  
MINE, Lewis Co, Cu, Au  
ELECTRIC POINT MINE  
Spokane  
Lessee: Fred M Viles  
MINE, Stevens Co, Pb  
(Subleasing to Farmer Mines  
Enterprises, Oliver Harris,  
Northport)

# **ELKHORN MFG CO**

**Yakima**  
Pres: J Q A Price  
VP: W S Doyle  
Sec-Treas: Floyd L Lewis  
(See Mont)

**GERMANIA CONSOL MINES, INC**  
401 Empire State Bldg, Spokane 1  
Pres: Julius A Franz  
VP & Gen Mgr: Henry Franz  
Sec-Treas: E I Fisher  
Dir: H G Loop  
GERMANIA CONSOL MINE,  
Hunters, undergr, WO<sub>3</sub>  
Prod: 25 tons  
25-TON GRAV-FLUT MILL

**GLADSTONE MT MNG CO**  
302 Radio Central Bldg, Spokane  
Pres: R H Graham  
VP: Fred W Viles  
Sec-Treas: E E Nicholas  
GLADSTONE MINE, at Leadpoint,  
Pb, Ag  
Lessee: A G Lotte

**GODFREY, JOHN & ELMER & YOCUM, ERNIE**  
Northport  
Gen Mgr: John Godfrey  
LEAD KING MINE, 20 mi E of  
Northport, undergr & surface, Pb  
Under devel

**GOLD BOND MINING CO**  
300 Columbia Bldg, Spokane 4  
Pres: Frank Lilly  
MINE, Chelan Co, Au

**GOLD GULCH MINING CO**  
Coeur d'Alene, Idaho  
Pres: John A Youngman  
MINE, Chelan Co, Au

**GOLDEN ARROW MINE**  
Twisp  
Owner: Walter Courlie  
GOLDEN ARROW MINE, Whatcom  
Co, Au, Ag, Pb

**GOLDFIELD CONSOL MINES CO**  
Box 2520 or 206 N Virginia St,  
Reno, Nevada  
Res Mgr: T Higginbotham  
DEEP CREEK MINE, Stevens Co,  
Zn, Pb  
Mine Supt: Al Quine, Colville  
300-TON FLOT MILL  
(See Calif, Nev)

**GRANDVIEW MINES**  
310-311 Radio Central Bldg,  
Spokane 4  
Pres: Karl W Jasper  
VP: Paul Hoeltel  
Sec: E K Barnes  
HARTBAVER & BOSSER, MAKI,  
LETTE PROSPECTS, Northpoint  
dist, diamond drilling  
CURRENT CR CLAIMS PROSPECT,  
Northpoint dist,  
Under devel  
(Joint venture with American Zinc,  
Lead & Smelting)

**HARRIS & BUMGARDNER**  
Northport  
Gen Mgr: Oliver W Harris, Jr  
ELECTRIC POINT MINE, 15 mi E  
of Northport, undergr, Pb  
Prod: 10 tons  
10-TON GRAV MILL, Leadpoint  
Mill Foreman: Ernie Yocum

**HOWE SOUND CO, CHELAN DIV**  
Holden  
Pres: H H Sharp  
VP: E Richter  
Sec: W T Holmes  
Mgr: J S Roper  
Met: F H Brogan  
Elec Engr: G J McCulloch  
Geol: T L Wilson  
Safety Engr: W Craven  
Purch Agt: Ch Acet: R Scott  
HOLDEN MINE, undergr, 12 mi  
from Lucerne, Cu, Au, Zn  
Mine Supt: W S Phillips  
Mine Foreman: F A Robertson  
Ch Mine Engr: J M Newman  
Prod: 1,900 tons  
2,000-TON GRAV-FLUT MILL  
Mill Supt: M E DeFoe  
Assayer: J L Lafrant

**INDEX MINING CO**  
2430 Monte Vista Pl, Seattle 99  
Mgr: C V Brennan, Jr  
Treas: A G Brennan  
SUNSET COPPER MINE, Snohomish  
Co, 67 mi NE of Seattle, undergr,  
Au, Ag, Cu  
Under devel

**INDIAN CREEK MERCURY**

**MINES, INC**  
1711 Smith Tower, Seattle 4  
c/o Ray R Whiting  
INDIAN CREEK MINE, Yakima Co,  
Hg

**IOWA MINE**  
Rt 1, Box 156, Monroe  
c/o Robert T Curtiss  
IOWA MINE, Snohomish Co, Cu,  
Ag, Au  
(Lessee of Mint claim from Sulian  
Basis Mining Co)

**KNOB HILL MINES, INC**  
306 Sansome St, San Francisco,  
Calif  
Pres & Gen Mgr: H N Kuechler, Jr  
VP: C L Cooper  
Sec: D D Farley  
Treas: L E Heilar  
KNOB HILL MINE, Republic,  
undergr, Au, Ag  
Gen Supt: A R Patterson  
Supt: J E Davis  
Foreman: H W Marsh  
Engr: T L Pittman  
400-TON FLOT MILL, Cyanidation  
of tailings  
Supt: Louis Lembeck  
Assay: A J Fergus

**KROMONA MINES CORP**  
721 Lloyd Bldg, Seattle  
Pres & Gen Mgr: J F Kram  
VP: J F Brand  
Sec-Treas: George Wizer  
KROMONA MINE, 19 mi NE of  
Sultan, Snohomish Co, Ag, Au, Cu,  
WO<sub>3</sub>  
Mine Foreman: Irving O Sakkinen  
Mine Engr: R B Cole  
100-TON FLOT MILL  
Mill Supt: W H Marquette

**LA SOTA, F P & JONES, E P**  
Metaline Falls  
MINE, Pend Oreille Co, Zn, Pb  
Under devel

**LITTLE KING TUNGSTEN MINE**  
Box 384, Deer Park  
LITTLE KING TUNGSTEN MINE,  
Blue Grouse Mt, WO<sub>3</sub>  
Mgr: W H West

**LONE STAR MINE**  
(ATTWOOD COPPER MINES, LTD)  
844 W Hastings St,  
Vancouver, B C, Canada  
Pres: Dr Desmond F Kidd  
LONE STAR MINE, Ferry Co, Cu

**LOVITT MNG CO, INC**  
Box 1668, Wenatchee  
Pres & Gen Mgr: E H Lovitt  
VP: Vere McDowell  
GOLD KING MINE, 3 mi S of  
Wenatchee, undergr & surface, Au,  
Ag, silicea  
Mine Engr: Oscar Thompson  
Prod: 250 tons

**METALINE CONTACT MINES, INC**  
c/o Therrett Towles  
Old Nat'l Bank Bldg, Spokane  
Pres: Stanley A Easton  
VP: L J Randall  
Sec: Therrett Towles  
MINE, 1 1/2 mi S of Metaline Falls,  
undergr, Zn, Pb  
Mine Supt: Clive Tedrow  
Idle

**METALINE MNG & LEASING CO**  
310 Radio Central Bldg,  
Spokane  
Pres: Karl W Jasper  
VP: E P Ryan  
Sec: E K Barnes  
Asst Sec: Mae C Hamilton  
MINE, Metaline Falls, 100 mi  
N of Spokane, Pb, Zn  
Mine Supt: Clive Tedrow  
Explor  
(Leased to Sullivan Mng Co)

**MIDNIGHT MINES, INC**  
Spokane  
Pres: C Wynecoop  
MINE, Spokane Indian Reser-  
vation, 12 mi from Wellpinit,  
UO<sub>3</sub>  
Producing

**MINES MANAGEMENT, INC**  
909 W Sprague Ave, Spokane  
Pres & Gen Mgr: W R Green  
VP: E E Johnston  
Sec: L Howe  
ADVANCE MINE, 6 mi S of  
Northport, undergr, Zn, Pb  
Under devel  
IROQUOIS MINE, 3 mi NE of  
Leadpoint, undergr, Zn, Pb  
Under devel

**70-TON FLOT MILL, Northport**

**NORTHWEST MAGNESITE CO**  
Chewelah  
Pres: E A Garber  
VP: C A Sargent  
Sec: J C Stivers  
Gen Mgr: H A Ziebell  
Plant Supt: Verdie Gentis  
Elec Engr: Young Spears  
Plant Engr: Barney Endrice  
Purch Agt: L A Knight  
RED MARBLE MINE, 20 mi SE  
of Chewelah, undergr, surface,  
magnesite  
Mine Supt: Roger L Fish  
Mine Foreman: Lloyd King, John  
Estes  
Mine Engr: J Branner  
FINCH QUARRY, 3,000-TON  
FLOT MILL & HEAVY MEDIA  
Mill Supt: T W Morton

**NORTHWEST REFIN & CHEM CO**  
725 Peyton Bldg, Spokane  
Pres: Barnard Wilcox  
VP: Tollitt R Hance  
Sec: Samuel E Salter  
Treas: Clark Upton, III  
CUSTOM SMELTER, Dishman

**PACIFIC MUTUAL SILVER LEAD CO**  
Box 1805, Spokane  
Pres: C A Lyon  
VP: M C Yeager  
Sec-Treas & Gen Mgr: C A Gray  
ADDISON MINE, 11 mi SE of  
Keller, Ag, Pb, Zn, WO<sub>3</sub>  
Engr: B O Goodsell  
Under devel

**PACIFIC NORTHWEST ALLOYS**  
Box 5247, Hillyard Station,  
Spokane 28  
Pres: Leo H Timmins  
VP & Gen Mgr: H B Megill  
Asst Gen Mgr: M E Hertel  
Met: L Bunker  
Mech & Elec Engr: W Swann  
Sec: R E Lowe  
Mng Engr: J Armstrong  
Safety Engr: W E Hedger  
Purch Agt: C Stark

**PACIFIC NORTHWEST MNG CO**  
Bremerion  
Pres: Martin Morrison  
VP: Robt A Fuke  
Gen Mgr: Norman D Lindsay  
Geol: J W Melrose  
LUCILLE & RED TOP MINES,  
2 mi N of Leadpoint, undergr,  
Zn, Pb, Ag, Cd  
75-TON FLOT MILL

**PACRON MINES, INC**  
310-312 Radio Central Bldg,  
Spokane 4  
Pres: Graham Lammers  
VP: Clive Tedrow  
Sec: Karl W Jasper  
RUSSIAN CREEK CLAIMS, 16 mi  
N of Metaline Falls  
Idle

**PEND OREILLE MINES & METALS CO**  
923 Old Nat'l Bank Bldg  
Spokane 1  
Ch of Bd: S A Easton  
Pres: L P Larsen  
VP & Treas: Jens Jensen  
Sec: A Wimberly  
Gen Mgr: W L Zeigler  
Purch Agt: R G Walker  
Gen Supt: I M Kinney  
PEND OREILLE MINE, 2 mi N  
of Metaline Falls, undergr, Zn  
Pb  
Supt: L G Billings  
Foreman: Craig Cody  
Mine Engr: A E Betchart  
2400-TON FLOT MILL  
Mill Supt: J C Crampton  
Assayer: R W Townsend

**PENTICTON TUNGSTEN MINES, LTD**  
715 Hulton Bldg, Spokane  
GERMANIA MINE, Stevens Co,  
WO<sub>3</sub>

**PHELPS-DODGE CORP**  
Douglas, Ariz  
PROP, Stevens Co, UO<sub>3</sub>  
Under devel  
(See Ariz, New Mex, N Y, Tex)

**PIONEER MINING CO**  
Colville  
c/o D A Newland & Assoc  
LONGSHOT MINE, Old Dominion  
dist, Stevens Co, Ag, Zn, Pb,  
WO<sub>3</sub>

**SAGINAW GOLD & COPPER MINES, INC**  
500 Gladstone St, Bellingham  
Pres & Gen Mgr: R L Averill  
VP: Joe Westhoff  
Sec: Alth C Averill  
MINE, 37 mi E of Bellingham,  
undergr, Cu, Au, Ag  
Under devel  
FLOT MILL, under constr

**SCANDIA MINING GROUP**  
32 E 29th Ave, Spokane  
Owners: T Nasburg, R Hallenius,  
John & Effie Nasburg  
SCANDIA GROUP, 6 1/2 mi SE  
of Northport, Pb, Zn, Ag  
Prod: 20 tons

**SILVER MOUNTAIN MINING CO, INC**  
2403 S Tacoma Way, Tacoma 3  
Pres: Arthur G Nickelsen  
SILVER MOUNTAIN MINE, Okanogan  
Co, Ag, Au, Pb, Zn

**SUNNY PEAK MNG CO**  
300 Columbia Bldg, Spokane  
Pres: Charles J Weller  
VP: H E Mazier  
Sec: F W Kiesel  
Gen Supt: C L Butler  
MINE, Concomly, Okanogan Co,  
undergr, Ag  
Gen Supt: C L Butler  
Under devel

**TALISMAN MNG & LEASING CO**  
730 Peyton Bldg, Spokane  
Pres: H T Born  
VP: Walter Hasen  
Sec: Sam Perry  
Treas: Clifford Taylor  
TALISMAN MINE, Laurier,  
undergr, surface, Ag, Cu, Pb,  
Zn, Cd  
100-TON FLOT MILL

**WESTERN STATES COPPER CORP**  
5909 Phinney Ave, Seattle 3  
Pres: Charles Sisenvine  
MINE, King Co, Cu, Au, Ag  
(Property leased from M F  
Gilbreath, Seattle)

## WEST VIRGINIA

**GREER LIMESTONE CO**  
Box 844, Morgantown  
Owner: Greer Steel Co  
Gen Mgr: F A Wadsworth  
MINE, 10 mi E of Morgantown,  
undergr, limestone  
Mine Supt: Wade Burns  
Mine Foreman: Frank Pirlo  
Prod: 800 tons  
800-TON MILL

**MEADOWBROOK CORP**  
SUBSID OF MATTHEWSEN &  
HEELER ZINC CO  
Box 463, La Salle, Ill  
Pres: H D Carus  
VP: A C Carus  
Sec-Treas: C R MacBrynn  
RETOHT  
Meadowbrook  
VP: H A Gronemeyer  
Works Mgr: T R Ferguson

## WISCONSIN

**BAKER G M, MLG CO**  
Benton  
TAILINGS, various mines, Pb, Zn  
HOSKINS MILL, Shullsburg  
350-TON MILL  
Idle

**CUBA MNG CO**  
Vesterville  
Treas: A W Heins  
Mgr: E G Dautman  
PROPS, nr Mineral Point &  
New Higgins  
Idle

**DAVIS MNG ENTERPRISES**  
Linden  
Partner: Vernon C Davis  
KICKAPOO LEASE, undergr, Zn, Pb  
Mine Foreman: Jas es E Martin  
360-TON GRAV-FLUT MILL

**DODGEVILLE MINING CO**

## Wyoming

324 Gay Bldg, Madison  
Part: J J MacDonald  
Gen Mgr & Part: C W Singer  
150-TON GRAY-FLAT MILL  
RICHARDS LEASE, N of Mineral  
Point, Zn, Pb

**EAGLE PITCHER CO, THE**  
MNG & SMLTG DIV  
Mng: C O Dale (Gallena, Ill)  
BRACKETT MINE, Hualapai Green, undergr,  
Zn, Pb  
KITTO, HAYDEN, GENZLER MINES,  
Shullsburg, undergr, Zn, Pb  
1,200-TON FLOT MILL, Shullsburg  
(See Ariz, Colo, Ill, Nev, Kans,  
Okla, Utah)

**HOMESTEAD MINING CO**  
Platteville  
Pres: R W Piquette  
VP: E Rasmussen  
Sec: W J Thompson  
ACME & RASQUE MINES, near  
Platteville, undergr, Zn, Pb  
100-TON GRAY-FLAT MILL  
Idle

**MEEREN'S GROVE MNG CO**  
305 Broadway St, Platteville  
LIBERTY & LEO V MINES, 5 mi NE  
of Cuba City, undergr, Zn  
Idle

60-TON GRAY-FLAT MILL,  
1 mi from Liberty Mine  
Idle

**MIFFLIN MNG CO**  
Box 132, Minn  
Owner: Herb Turner  
COKER, RICHFORD MINES,  
undergr, Zn, Pb  
Gen Mgr: John F Howland  
200-TON GRAY-FLAT MILL  
Mill Supt: G H Pett

**MONTREAL MINING CO**  
Montreal  
Gen Mgr: Frank J Smith  
MONTREAL MINE, 4 mi W of  
Hurley, undergr, Fe  
Mine Supt: C A Bjork  
Asst Supt: C P Gouther  
Prod: 4,000 tons per day  
(See Minn)

**MURRAY & RICHARDS**  
500 Minerva St, Darlington  
Mng: J H Richards  
JAMES MINE, Shullsburg,  
undergr, Zn, Pb  
Idle

**THE NEW JERSEY ZINC CO**  
Box 217, Platteville  
EXPLORATION STAFF  
Res Geol: J M Hagen  
Geol: G Willard, R J Smith  
(See Colo, New Mex, N Y, Utah, Va)

**PICKANDS MATHER & CO**  
ODANAH IRON CO  
CARY MINE, Hurley, undergr  
Supt: J C Wagnard  
(See Minn, Minn)

**PIQUETTE MNG & MFG CO**  
Box 4, Platteville  
Gen Mgr: F B Piquette  
MINE, 15 mi W of Platteville,  
undergr, Zn, Pb  
Idle

**PLAT MILL**

**VAIL ENGINEERING CO**  
Box 50, Platteville  
Pres: A V Austerman  
Sec-Treas: Marguerite Webb  
CHAMPION MINE, New Diggings,  
undergr, Zn, Pb  
Prod: 300 tons  
100-TON GRAY-FLAT MILL  
Mill Supt: Charles Bennett  
Assayer: M Webb

**VINEGAR HILL ZINC CO**  
Platteville  
Gen Mgr: W N Smith  
Gen Supt: John Locke  
Works Acct: A W Heine  
EAST BLACKSTONE, MULCARY,  
MANCOCK MINES, Shullsburg,  
MANCOCK MINE, FLOT  
Prod: 800 tons Zn Conc per  
month

**ZONTELLI BROS, INC**  
DAVIDSON MINE, Florence,  
surface, Fe  
Mine Supt: Don Olin

## WYOMING

**AMERICAN COLLOID CO**  
Upson  
Gen Supt: Edwin Busfield  
Elec Engr: A G Clem

Purch Agt: Roy H Harris  
MINE, near Upton, surface,  
bentonite  
Mine Supt: Orville Horn  
Prod: 250 tons  
100-TON MILL  
Asst Mill Supt: Donald Horn  
(See Ill, Miss, S Dak)

**AMERICAN URANIUM CO**  
325 Cont Oil Bldg,  
Denver, Colo  
PROPERTIES, Converse &  
Campbell Counties, U<sub>2</sub>O<sub>8</sub>  
Under devel

**BLACK HILLS BENTONITE**  
CO  
Moorecroft  
Pres: H T Thorson  
Gen Mgr: A C Harding  
MINE, Moorecroft & Upton,  
surface  
Supt: Ralph McCoy  
150-TON MILL, drying & grinding  
Supt: Boyd Ash

**CARISSA GOLD MINES,**  
INC  
705 First Security Bank Bldg,  
Salt Lake City, Utah  
Gen Mgr: H R Clinger  
CARISSA MINE, South Pass City,  
undergr, Au, Ag  
75-TON AMALG-CYANIDE MILL  
CENTRAL OIL & URANIUM,  
INC  
Box 8, Douglas  
Pres: Bruce Anderson  
VP: R L Peterson  
Sec: J W Anderson  
URANIUM EXPLOR

**COKE RIVER DEVEL CO**  
Box 20, Green River  
Pres & Gen Mgr: J N Igo  
VP: Chas W Anderson  
Sec: H P Thomas  
SNOWBALL GP, undergr, surface,  
U<sub>2</sub>O<sub>8</sub>  
Crooks Gap  
Gen Supt: G B Gaylord  
Asst Mine Supt: Al Turk  
Producing

**COLO FUEL & IRON CORP**  
Sunrise  
SUNRISE MINE, undergr, Fe  
Supt: M L Sisson  
Engr: H B Lomch  
Ch Elec: R E Davis  
Ch Chem: H A Robb  
Mine Foreman: A E Testolin  
Prod: 2,500 tons  
(See Colo)

**COPPER KING MNG CO**  
408 Boyd Bldg, Cheyenne  
Pres & Gen Mgr: Harry Ferguson  
VP: Andy E Roodel  
Sec: F W Dimmen, Sr  
Treas: Harry E Buckman  
COPPER KING MINE, 22 mi W  
of Cheyenne, Au, Ag, Cu, Ti  
Mine Engr: T L Johnston, (Laramie)  
Under devel

**CROWN URANIUM CO**  
205 Star Bldg, Casper  
Pres: John G Obrecht  
VP: Nathan Novick  
Sec: Darrell Gillilan  
Treas: Earl R Johnson  
CLAIMS, various parts Colo  
Plateau, U<sub>2</sub>O<sub>8</sub>  
(See Colo, Utah)

**GOLD EMPIRE, INC.**  
URANIUM DIV  
1717 E Colfax Ave, Denver 10,  
Colo  
PROPS, Albany, Niobrara, Crook  
Co, U<sub>2</sub>O<sub>8</sub>  
(See Utah)

**HOMESTEAK MINING CO**  
100 Bush St, San Francisco 4,  
California  
PROPERTIES, U<sub>2</sub>O<sub>8</sub>  
Under devel  
(See S Dak, Utah)

**HUGHES MNG CO**  
Box 480, Riverton  
PROPS, surface, U<sub>2</sub>O<sub>8</sub>  
Mine Supt: Chas Haidress  
Asst Supt: Burl Peterson  
(See Utah)

**INTERMTN CHEM CO,**  
CBLOK-ALKALI DIV,  
FOOD MACHIN & CHEM  
CORP  
Box 872, Green River  
Dist Mgr: P Farley  
WESTVAC MINE, undergr, treas  
Gen Mgr: C A Romano  
Gen Supt: N E McDougal

Process Supt: W C Bauer  
Mech Engr: H F Young  
Purch Agt: R F Jones  
Elec Engr: L Ruffini  
Main Supt: M E Birmingham  
Mine Supt: G B Gaylor  
Asst Mine Supt: S F Love  
Misc Engr: W Waneberg  
200-TON PLANT  
Mill Supt: J R Jacobucci  
Asst Mill Supt: A F McCue

**INTERNAT'L MINERALS &**  
CHEM CORP, EASTERN  
CLAY PRODUCTS DIV  
Belle Fourche, S Dakota  
MINE, Crook Co, surface,  
bentonite  
Mgr & Purch Agt: K L Arthur  
Supt: J A Brown  
MILL, Belle Fourche, S Dakota  
(See Ariz, Colo, Fla, Mo, Miss,  
New Mex, N Y, N C, Ohio, S  
Dak, Tenn)

**KERR-McGEE OIL INDUS**  
INC, NAVAJO URANIUM  
DIV  
MINES, Cambell Co, surface, U<sub>2</sub>O<sub>8</sub>  
Under devel  
(See New Mex)

**L & L URANIUM CO**  
523 1st Nat'l Bank Bldg,  
Denver 2, Colo  
HOLDINGS, various parts of Wyo,  
U<sub>2</sub>O<sub>8</sub>  
(See Colo)

**LITTLE MISSOURI MNG**  
COMPANY  
Owners: Allan Douglas (Upton)  
L A Henderson (Newcastle)  
John Kummerfeld (Douglas)  
Scotty Gladstone (Sundance)  
MINE, near New Haven, surface,  
U<sub>2</sub>O<sub>8</sub>  
Producing

**LUCKY Mc URANIUM CORP**  
901 Walker Bank Bldg, Salt Lake  
City, Utah  
Pres & Gen Mgr: W H Craemer  
Sec: Robert Cranmer  
Treas: Robert Moran  
LUCKY Mc MINE, surface, U<sub>2</sub>O<sub>8</sub>  
VP: Neil McNeice  
Gen Supt: Donald Anderson  
Mine Supt: Clyde Morefeld  
Producing

**MAGNET COVE BARIUM**  
CORP  
Box 632, Greybull  
Mgr: Lee Grenier  
MINE, 8 mi E of Greybull,  
surface, bentonite  
250-TON MILL, drying & grinding  
Mill Supt: John M Copenhaver

**MID-CONTINENT EXPLOR**  
CO  
Sundance  
Piters: A J Katches & H M  
Brickel  
MINES, 15 mi E of Atlantic City,  
rare earth, Mn, CaF<sub>2</sub>, WO<sub>3</sub>  
Under devel  
(See S Dak)

**MIKOLITE SALES CORP**  
Encampment  
MINE, 5 mi N of Encampment,  
surface, vermiculite  
Under devel

**MINERAL MNG CO, INC**  
Box 730, Cody  
Pres: Walter J Ray  
VP: Carl B Olsen  
Sec: Ruth E Ray  
Purch Agt: James N Ray  
(See N Dak)

**MOUNTAIN MESA**  
URANIUM CORP  
Box 1488, Casper  
Pres: Maurice Yates  
VP: B T McManus  
Sec: D Hower Moffatt  
BLARCO, RIM, HAZEL MINES,  
Gas Hills & Green Mtn areas,  
Fremont Co, U<sub>2</sub>O<sub>8</sub>  
Gen Mgr: R B Thurston  
Geol: R F Parker  
Producing  
(See Utah)

**NAT'L LEAD CO, BARIOD**  
DIV  
Cnaga  
CLAY SPUR PLANT  
Mine & Mill Supt: Joe Rosetti  
MINE, surface, bentonite

PLANT, dry grinding  
(See Ark, Kans, Mo, Nev, N Y,  
Tex)

**OLD FAITHFUL URANIUM,**  
INC  
300 Consol Royalty Bldg,  
Casper  
Pres: W F Swanton  
VP: Glen Hendershot  
Sec-Treas: Floyd W Bailey  
URANIUM CLAIMS  
Gen Mgr: John French

**PHOSPHATE FERTILIZER,**  
INC  
Kemmerer  
Pres: Mayben Fox  
VP: Joe Profazies  
Sec-Treas: Arthur Pix  
Gen Mgr: Matt Bertagnoli  
PHOSPHATE MINES, INC, 9 mi  
N of Susie, undergr phosphate  
Idle

200-TON MILL, Susie  
Foreman: Rex Borino

**ROUNDS AND SCHIRMER**  
MNG CO  
Sundance  
MINE, near Devil's Tower, surface,  
U<sub>2</sub>O<sub>8</sub>  
Under devel

**SAN FRANCISCO CHEM CO**  
Dr F Montpelier, Idaho  
LEEPE MINE, 2 mi NW of Sage,  
surface, phosphate  
Mine Supt: P S Fugmire  
Prod: 1,000 tons  
CRUSHING, PULVERIZING &  
BAGGING PLANT, 2 mi NW of  
Sage  
(See Idaho, Utah)

**SAPPHIRE PETROLEUMS**  
LIMITED  
Toronto, Ontario  
MINE, 2 mi W of Baggs, surface,  
undergr, U<sub>2</sub>O<sub>8</sub>  
Under devel

**SCHUNDLER, F E CO, INC**  
Rock River  
Pres: F E Schundler  
VP: J C Kingsbury  
Sec: L H Sprague  
MINE, 17 1/2 mi NW of Rock River,  
surface, bentonite  
Mine Supt: Ralph Madison  
Asst Mine Supt: Harland Pierce  
(See New Mex)

**SODAK URANIUM & MNG CO,**  
INC  
Box 330, Edgemont, S Dak  
KLING, BONATO, APLAND  
LEASES, Crook Co, surface,  
U<sub>2</sub>O<sub>8</sub>, V  
Under devel  
(See S Dak)

**VITRO MINERALS CORP**  
600 W 32nd St, Salt Lake City,  
Utah  
Pres: C J Potter  
VP: W B Hall  
Sec: W H Deane, Jr  
SATECO PROPERTIES, Fremont Co  
surface, U<sub>2</sub>O<sub>8</sub>  
Gen Mgr: J O Horton  
Gen Supt: Russell Tyree  
Geol: D M Williams  
Producing  
(See Vitro Uranium Co, Utah)

**WYODAK CHEM DIV, FED**  
FOUNDRY SUPPLY CO  
4600 E 71st St, Cleveland,  
Ohio  
Pres: Elmer Ditty  
VP & Gen Mgr: L H Heyl  
Sec: Peter Reed  
Treas: Geo E Tate  
Purch Agt: J E Hollmeyer  
MINES, Crook & Weston Co's,  
surface, bentonite  
Mine Supt: John T McKean  
Prod: 700 tons  
DRYING & PULVERIZING MILL,  
near Upton  
Mill Supt: Carl Barritt

**WYOMING-GULF SULPHUR**  
CORPORATION  
Cody  
CEDAR MT SULPHUR MINE,  
4 mi W of Cody, surface, S  
conc, 150 tons  
Under devel  
100-TON FLOT MILL



# POSSIBLE MARKETS— ORES—METALS—NON-METALLICS

—AS COMPILED BY THE MINERALS  
DIVISION, U. S. BUREAU OF MINES

## ANTIMONY

American Smelting & Refining Co., 129 Broadway, New York 5, N. Y.  
Goldsmith Bros. Smelting & Refining Co., 1300 W. 59th Street, Chicago 36, Ill.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
W. R. Grace & Co., P. O. Box 288, Church St., Annex, New York 5, N. Y.  
Harnshaw Chemical Co., 1945 E. 97th Street, Cleveland 6, Ohio  
Intercontinental Metal Corp., 607 Fifth Avenue, New York 17, N. Y.  
McGean Chemical Co., 1040 Midland Building, Cleveland 15, Ohio  
Metal & Thermit Corp., 100 E. 42nd Street, New York 17, N. Y.  
Metal Traders, Inc., 67 Wall Street, New York 5, N. Y.  
Metre Smelting Co., Ontario & Bath Sts., Philadelphia 34, Pa.  
National Lead Co., 111 Broadway, New York 5, N. Y.  
Phillips Brothers, Inc., 79 Pine Street, New York 5, N. Y.  
South American Mineral & Merchandising Corp., 445 Park Avenue, New York 22, N. Y.  
Southern Lead Co., 2800 W. Moreland St., Dallas, Tex.  
C. Tennant, Sons & Co., 100 Park Avenue, New York 17, N. Y.  
Nathan Trotter & Co., 36 North Front Street, Philadelphia 6, Pa.  
Watson Gough & Co., 25 Broadway, New York 4, N. Y.

## ASBESTOS

American Brake Shoe Co., American Brakeblock Division, 4400 Merritt Ave., Detroit 9, Mich.  
American Hair & Felt Co., 1828 Merchandise Mart, Chicago 54, Ill.  
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.  
Asbestos Corp. of America, 99 West St., New York, N. Y.  
Asbestos Textile Co., Inc., 226 N. LaSalle St., Chicago 1, Ill.  
Atlantic Asbestos Corp., 2128 West Chester Ave., Bronx 61, N. Y.  
Atlas Asbestos Co., 500 Mitchell St., North Wales, Pa.  
Carolina Asbestos Co., Davidson, N. C.  
The Celotex Corp., 120 S. LaSalle St., Chicago 3, Ill.  
The B. F. Goodrich Co., 449 S. Main St., Akron 18, Ohio.  
Goodyear Tire & Rubber Co., 1144 East Market St., Akron 16, Ohio.  
Johns-Manville Corp., 22 East 46th St., New York 18, N. Y.  
Raybestos-Manhattan, Inc., Raybestos Div., 940 Rayman St., Bridgeport 2, Conn.  
Republic Filters Inc., 204 21st Ave., Paterson, N. J.  
Rostone Corp., 126 S. Karle Ave., Lafayette, Ind.  
Rohrbaugh Co., 509 Fifth Ave., New York 18, N. Y.  
F. E. Schundler & Co., Inc., 144 Railroad St., Joliet, Ill.  
Smith & Kanxler Corp., Linden, N. J.  
Standard Asbestos Mfg. Co., 600 Evergreen Ave., Chicago, Ill.  
Standoe Brake Lining Co., P. O. Box 93, 2701 Clinton Ave., Houston 1, Tex.  
Thermoid Co., 490 Whitehead Rd., Trenton 6, N. J.  
Union Asbestos & Rubber Co., 332 S. Michigan Ave., Chicago, Ill.  
U. S. Gypsum Co., 200 West Adams St., Chicago 6, Ill.  
U. S. Rubber Co. Textile Dept., 1230 36th Ave., New York 20, N. Y.  
Victor Mfg. & Gasket Co., 3752 Roosevelt Rd., Chicago, Ill.

## BARITE GRINDERS

(Possible Buyers of Crude Barite)

Acme Barite Co., Mineral Point, Mo.  
Arizona Barite Co., Box 826, Mesa, Ariz.  
Barium Products, Ltd., Box 8-A, Newark, Calif.  
Baroid Sales Division, National Lead Co., P. O. Box 1075, Houston 1, Texas  
The Glidden Co., Chemical & Pigment Division, 766 50th Ave., Oakland 1, Calif.  
Industrial Minerals & Chemical Co., Sixth and Gilman Sts., Berkeley, Calif.  
Industrial Minerals, Inc., York, S. C.  
Kennedy Minerals Co., 1552 East Olympic Blvd., Los Angeles 21, Calif.  
Magnet Cove Barium Corp., P. O. Box 4504, Houston 8, Texas.  
Mobar Corp., Mineral Point, Mo.  
Mudrite Chemical Corp., P. O. Box 590, Hatch, N. M.  
F. E. Schundler & Co., Inc., 504 Railroad St., Joliet, Ill.  
J. R. Simplot Co., Boise, Idaho  
L. A. Wood, Box 72, Sweetwater, Tenn. (Makes crushed barite only.)

(Possible Buyers of Crushed or Ground Barite for Use in Glass)

Anchor-Hocking Glass Co., 109 N. Broad St., Lancaster, Ohio.  
Ball Bros., Ryan and Bart Sts., Muncie, Ind.  
Brockway Glass Co., Brockway, Pa.  
Buck Glass Co., Fort and Silica Sts., Baltimore, Md.  
Commercial Glass Co., Fairmont, W. Va.  
Diamond Glass Co., Royersford, Pa.  
Foster-Forbes Glass Co., Marion, Ind.  
Glenhaw Glass Co., Glenhaw, Pa.  
Hazel-Atlas Glass Co., 1942 Danneburg St., Wheeling, W. Va.  
A. H. Kerr & Co., Sand Springs, Okla.  
Litchford-Marble Glass Co., P. O. Box 4707, Los Angeles, Calif.  
Owens-Illinois Glass Co., Duraglas Bldg., Toledo, Ohio.  
Owens-Illinois-Pacific Coast Co., 135 Stockton St., San Francisco, Calif.  
Sterling Glass Co., Lapel, Ind.  
Thatcher Manufacturing Co., Elmira, N. Y.  
Vitro-Agata Co., Parkersburg, W. Va.

(Possible Buyers of Ground Barite for Use in Paint)

Amalgamated Paint Co., Inc., Pier 11, North River, New York, N. Y.  
Armstrong Cork Co., 1010 Concord St., Lancaster, Pa.

Atlantic Paint & Varnish Works, Wilmington, N. C.  
Baker Paint & Varnish Co., 224 Saydam Ave., Jersey City, N. J.  
E. S. Browning Co., 1515 Third St., San Francisco, Calif.  
C. E. Butler Co., 2668 Hanna St., Oakland 8, Calif.  
Chilton Paint Co., 10 15th Ave., College Point, N. Y.  
Clement Coverall Co., 615 Van Hook St., Camden, N. J.  
Durable Paint Co., 373 Hamilton Ave., Brooklyn, N. Y.  
Fisher Thomsen & Co., Inc., 2109 N. W. 22nd Ave., Portland 10, Ore.  
Ford Motor Co., Dearborn, Mich.  
W. P. Fuller & Co., 301 Mission St., San Francisco, Calif.  
General Paint Corp., 2627 Army St., San Francisco 19, Calif.  
U. S. Gypsum Co., 300 W. Adams St., Chicago, Ill.  
U. S. Kalsomine Co., 68 Church St., New York, N. Y.  
Wesco Waterpaints, Fifth and Grayson Sts., Berkeley 1, Calif.

(Possible Buyers of Crude Barite for Use in Barium Chemicals)

Barium Products Ltd., Newark, Calif.  
Barium Reduction Corp., Drawer 1, South Charleston, W. Va.  
Chemical Products, Cartersville, Ga.  
E. I. du Pont de Nemours & Co., Du Pont Bldg., Wilmington 98, Del.  
Mallinckrodt Chemical Works, St. Louis, Mo.  
National Lead Co., Titanium Div., 111 Broadway, New York, N. Y.

## BENTONITE

(Possible Buyers of Crude and Ground)

Abbott Laboratories, North Chicago, Ill.  
American Colloid Co., Merchandise Mart Plaza, Chicago 54, Ill.  
Atlantic Refining Co., 248 S. Broad St., Philadelphia, Pa.  
Baroid Sales Div., National Lead Co., P. O. Box 1075, Houston 1, Texas  
Barnsdall Refractories, Inc., 61 E. Van Buren St., Chicago, Ill.  
Bradford Oil Refining Co., Bradford, Pa.  
Cities Service Refining Co., Boston, Mass.  
Commercial Minerals Co., San Francisco, Calif.  
Conewings Refining Co., Warren, Pa.  
Charles B. Crystal Co., Inc., 53 Park Place, New York, N. Y.  
Eastern Clay Products, Inc., 2234 Main St., Jackson, Ohio  
Federal Foundry Supply Co., 4620 E. 71st St., Cleveland, Ohio  
Filtrol Corp., 634 So. Spring St., Los Angeles 14, Calif.  
Great Lakes Foundry Sand Co., 790 United Artists Bldg., Detroit, Mich.  
Gulf Refining Co., 240 S. Broad St., Phila., Pa.  
Hammit & Gillespie, Inc., 226 Broadway, New York 7, N. Y.  
Harnshaw Chemical Co., 47 Ann St., New York 7, N. Y.  
Procter & Gamble Co., Gwynne Bldg., Cincinnati 1, Ohio  
Pure Oil Co., 35 E. Wacker Dr., Chicago, Ill.  
Quaker State Oil Corp., Emlenton, Pa.  
Ranger Chemical Corp., P. O. Box 1765, Houston 1, Texas  
Refractive Zeolite Co., 1023 Harney St., Omaha, S. Nebr.  
Richfield Oil Corp., of New York, Chanin Bldg., New York, N. Y.  
L. A. Salomon & Bros., 216 Pearl St., New York 7, N. Y.  
United Slay Mines Corp., 109 Oakland St., Trenton, N. J.  
Western Clay and Metals Co., 1 So. 2nd St., Alabama, Calif.  
Western Clay Products Co., P. O. Box 231, Houston, Texas  
Western Talc Co., 1901 E. Blanton Ave., Los Angeles 11, Calif.  
Whitehead Bros., 222 W. 23rd St., New York, N. Y.  
White Chemical Co., 47 Ann St., New York 7, N. Y.  
Wyodak Chemical Co., 4600 E. 71st St., Cleveland, Ohio

## BERYLLIUM

Beryllium Corp., P. O. Box 1462, Reading, Pa.  
Beryl Ores Co., P. O. Box 469, Route 1, Arvada, Colo.  
Brush Beryllium Co., 4301 Perkins Ave., Cleveland 3, Ohio.  
Dorby and Co., Inc., 205 Madison Ave., New York 17, N. Y.  
Poole Mineral Co., 18 W. Chester Ave., Philadelphia 44, Pa.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
Metallurg, Inc., 100 Park Ave., New York 17, N. Y.  
Phillips Bros., Inc., 70 Pine St., New York 5, N. Y.  
Frank Samuel and Co., Inc., Lincoln Liberty Bldg., Philadelphia 7, Pa.  
A. O. Smith Corp., 2523 N. 27th St., Milwaukee 16, Wisc.  
Note: Domestic beryl is also purchased at Government buying depots at Custer, S. Dak., Franklin, N. H., and Spruce Pine, N. C.

## BISMUTH

(Metal)

American Smelting and Refining Co., 129 Broadway, New York 5, N. Y.  
J. T. Baker Chemical Co., Phillipsburg, N. J.  
Belmont Smelting & Refining Works, Inc., 330 Belmont Ave., Brooklyn, N. Y.  
Cerro de Pasco Copper Corp., 48 Wall Street, New York 5, N. Y.  
Mallinckrodt Chemical Works, 2nd & Mallinckrodt Streets, St. Louis 7, Mo.  
Merck & Co., Inc., Rahway, N. J.  
National Lead Co., 111 Broadway, New York 5, N. Y.  
Norwich Pharmaceutical Co., 17 Eaton Avenue, Norwich, N. Y.  
Charles Pfizer & Co., Inc., 11 Bartlett Street, Brooklyn 6, N. Y.  
U. S. Metals Refining Co., 61 Broadway, New York 4, N. Y.

## CADMIUM

American Metal Co., Ltd., 41 Broadway, New York 5, N. Y.  
American Smelting and Refining Co., 129 Broadway, New York 5, N. Y.

American Zinc, Lead and Smelting Co., 1600 Paul Brown Bldg., St. Louis, Mo.  
 Anaconda Copper Mining Co., 35 Broadway, New York, N. Y.  
 Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho.  
 Chemical and Pigment Co. (Div. of the Glidden Co.), 2701 Brooming Highway, Baltimore 22, Maryland.  
 Eagle Picher Co. (Mining and Smelting Div.), P. O. Box 910, Miami, Ohio.  
 Harshaw Chemical Co., 1945 E. 97th St., Cleveland 4, Ohio.  
 International Minerals and Metals Corp., 11 Broadway, New York 6, N. Y.  
 International Smelting and Refining Co., International, Utah.  
 New Jersey Zinc Co., 160 Front St., New York 28, N. Y.  
 Sherwin-Williams Co., Ozark Smelting & Mining Div., 101 Prospect Av., N.W., Cleveland 1, Ohio.  
 St. Joseph Lead Co., 240 Park Avenue, New York 17, N. Y.  
 Sullivan Mining Co., Kellogg, Idaho.

#### CHROME ORE (Metallurgical Ore Users)

Baltimore Works, Armco Steel Corp., 3400 E. Chase St., Baltimore 13, Md.  
 Electro-Metallurgical Corp., 30 E. 42nd St., New York 17, N. Y.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Kookuk Electro-Metals Co., Kookuk, Iowa.  
 Montana Ferro-Alloys, Inc., P. O. Box 1400, Memphis, Tenn.  
 Ohio Ferro-Alloys Corp., Canton 2, Ohio.  
 Pacific Northwest Alloys, Inc., P. O. Box 6347, Hilliard Station, Spokane, Wash.  
 Pittsburgh Metallurgical Co., Niagara Falls, N. Y.  
 Universal Cyclope Steel Corp., Bridgeville, Pa.  
 Vanadium Corporation of America, 410 Lexington Ave., New York 17, N. Y.

#### (Chemical Ore Users)

Columbia-Southern Chemical Corp., Jersey City 5, N. J.  
 Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland, Ohio.  
 Diamond Alkali Co.-Kearny Plant, Belleville Turnpike, Kearny, N. J.  
 Foote Mineral Co., Inc., 10 E. Chestnut Ave., Philadelphia 44, Pa.  
 Imperial Paper & Color Corp., Glens Falls, N. Y.  
 Mutual Chemical Company of America, 90 Park Ave., New York 17, N. Y.  
 Frank Samuel & Co., Inc., Lincoln-Liberty Bldg., Philadelphia 7, Pa.

#### (Refractory Ore Users)

Basic Refractories, Inc., 945 Hanna Bldg., Cleveland 15, Ohio.  
 Eastern Stainless Steel Corp., Baltimore 3, Md.  
 General Refractories Co., 1520 Locust St., Philadelphia, Pa.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Harbison-Walker Refractories Co., Farmers Bank Bldg., Pittsburgh 22, Pa.  
 Kaiser Aluminum & Chemical Corp., 1924 Broadway, Oakland 12, Calif.  
 E. J. Lavino & Co., 1529 Walnut St., Philadelphia 2, Pa.  
 Frank Samuel & Co., Inc., Lincoln-Liberty Bldg., Philadelphia 7, Pa.  
 U. S. Steel Corp., 525 William Penn Plaza, Pittsburgh 30, Pa.

#### COBALT

Ceramic Color & Chemical Mfg. Co., New Brighton, Pa.  
 Foote Mineral Co., 18 W. Chestnut St., Philadelphia 44, Pa.  
 Harshaw Chemical Co., 1945 East 97th St., Cleveland, Ohio.  
 Kennametal, Inc., Latrobe, Pa.  
 The Fyrites Co., Wilmington, Del.  
 The O. H. H. Co., Carnegie, Pa.  
 Shepherd Chemical Co., Highland Avenue, Cincinnati, Ohio.

#### COPPER

American Metal Co., Ltd., Carteret, N. J.  
 American Smelting & Refining Co., El Paso, Tex., Garfield, Utah, Hayden, Ariz., Tacoma, Wash.  
 Anaconda Copper Mining Co., Anaconda, Mont.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Inspiration Consolidated Copper Co., Inspiration, Ariz.  
 International Smelting & Refining Co., Miami, Ariz., Tooele, Utah  
 Kennecott Copper Corp., McGill, Nev., Harley, N. M.  
 Magma Copper Co., Superior, Ariz.  
 Phelps Dodge Refining Corp., Laurel Hill, N. Y.  
 Phelps Dodge Corp., Douglas, Ariz., Morenci, Ariz., Ajo, Ariz.  
 C. Tennant Sons & Co., Empire State Bldg., New York 1, N. Y.  
 Tennessee Copper Co., Copperhill, Tenn.

#### COLUMBITE-TANTALITE

Electro Metallurgical Division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 Fantucci Metallurgical Corp., N. Chicago, Ill.  
 Foote Mineral Co., 18 W. Chestnut Ave., Philadelphia 44, Pa.  
 Kennametal, Inc., Latrobe, Pa.  
 Metal Hydrides, Inc., 12-34 Congress St., Beverly, Mass.

Note: Columbite-tantalite is also purchased at Government buying depots at Custer, S. Dak., Franklin, N. H., and Spruce Pine, N. C.

#### DIATOMITE

American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y.  
 A. Deigres & Co., 161 West Kinzie St., Chicago, Ill.  
 General Refractories Co., 1510 Locust St., Philadelphia, Pa.  
 R. F. Goodrich Co., 440 S. Main St., Akron, Ohio.  
 Hygeia Filter Co., 3622 Denton St., Detroit.  
 Industrial Minerals & Chemical Co., 836-39 Gilman St., Berkeley, Calif.  
 Marshall Dill Division, WhiteCo Chemical Co., 30 Bluzeme St., San Francisco, Calif.  
 National Fire Media Co., Sales Div. of Filter Media Corp., 1710 Dixwell Ave., New Haven, Conn.

#### GRINDERS OF FELDSPAR

Abingdon Potteries, Inc., 801 West Main St., Abingdon, Ill.  
 Bell Minerals Co., West Park, Me.

Clinchfield Sand & Feldspar Corp., 413 Washington Ave., Towson 4, Baltimore, Md.  
 Consolidated Feldspar Dept., International Minerals and Chemical Corp., Erwin, Tenn.  
 Del Monte Properties Co., Box 150, Pacific Grove, Calif.  
 Eureka Mica Mining & Milling Co., 190 West State St., Trenton, N. J.  
 Feldspar Flotation, Inc., Spruce Pine, N. C.  
 Feldspar Milling Co., Burnsville, N. C.  
 Gladding, McBean & Co., 2901 Los Feliz Blvd., Los Angeles, Calif.  
 Golding-Keene Co., Box 456, Keene, N. H.  
 Golding-Keene Co., Trenton Feldspar Plant, 1401 New York Ave., Trenton 5, N. J.  
 J. F. Morton, Inc., P. O. Box 232, Trenton 2, N. J.  
 North Carolina Feldspar Corp., Erwin, Tenn.  
 Topsham Feldspar Co., Box 34, Topsham, Me.  
 Western Feldspar Milling Co., Box 671, Salida, Colo.  
 Worth Spar Co., P. O. Box 783, Middletown, Conn.

#### (Applite)

Dominion Minerals Division, Riverton Lime & Stone Co., Inc., Piney River, Va.  
 Consolidated Feldspar Dept., International Minerals & Chemical Corp., Erwin, Tenn.

#### FLUORSPAR

##### (Brokers or Selling Agents)

Balfour, Guthrie, & Co., Los Angeles, Calif.  
 Baser-Wilson & Bateman, 135 E. LaSalle St., Chicago, Ill.  
 Continental Ore Co., 590 Fifth Ave., New York City.  
 E. I. du Pont de Nemours & Co., 1907 Market St., Wilmington, Del.  
 Foote Mineral Co., 18 W. Chestnut Ave., Philadelphia 44, Pa.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Hickman, Williams & Co., Clark Bldg., Pittsburgh, Pa.  
 Kechner, Marshall & Co., Oliver Bldg., Pittsburgh, Pa.  
 E. J. Lavino & Co., 1529 Walnut St., Philadelphia, Pa.  
 Mercantile Import & Export Corp., 21 East 40th St., New York City.  
 Mercantile Metal & Ore Corp., 80 Wall St., New York City.  
 Miller-Adick Co., Carew Tower, Cincinnati, O.  
 Ogilby Norton & Co., Hanna Bldg., Cleveland, O.

#### GERMANIUM

American Smelting and Refining Co., 120 Broadway, New York 5, N. Y.  
 The American Steel and Wire Div., United States Steel Corp., Rockefeller Bldg., Cleveland 13, Ohio.  
 American Zinc, Lead and Smelting Co., Paul Brown Building, St. Louis, Missouri.  
 Eagle Picher Co., Mining and Smelting Div., First Nat. Bank Bldg., Miami, Ohio.  
 Sylvania Electric Products, Inc., Towanda, Pa.

#### GRAPHITE

American Refractories & Crucible Corp., North Haven, Conn.  
 The Asbury Graphite Mills, Inc., Asbury, N. J.  
 Cummings-Moore Graphite Co., 1646 Green Ave., Detroit 9, Mich.  
 Joseph Dixon Crucible Co., 167 Wayne St., Jersey City 2, N. J.  
 Charles Fettes, Inc., 1 E. 42nd St., New York 17, N. Y.  
 Superior Flasks Graphite Co., 33 E. Clark St., Chicago 3, Ill.  
 United States Graphite Co., Holland Ave., Saginaw, Mich.

#### IRON ORE

Alan Wood Steel Co., Conahocken, Pa.  
 Armco Steel Corp., Middletown, Ohio.  
 Barium Steel Corp., 25 Broad St., N. Y., N. Y.  
 Bethlehem Steel Company, Bethlehem, Pa.  
 Chester Blast Furnace, Inc., Chester, Pa.  
 Colorado Fuel & Iron Corp., Pueblo, Colorado.  
 Crucible Steel Co. of America, P. O. Box 11, Grand Central Annex, New York, N. Y.  
 Detroit Steel Corp., Portsmouth, Ohio.  
 Ford Motor Co., 3000 Schaefer Road, Dearborn, Mich.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Granite City Steel Co., Box 367, Granite City, Ill.  
 Hanna Furnace Corp., Grant Bldg., Pittsburgh, Pa.  
 Inland Steel Co., 3210 Watling St., E. Chicago, Indiana.  
 Interlake Iron Corp., 1900 Union Commerce Bldg., Cleveland 14, Ohio.  
 International Harvester Co., 180 No. Michigan Ave., Chicago 1, Ill.  
 Jones & Laughlin Steel Corp., 401 Liberty Ave., Gateway Center, Pittsburgh 30, Pa.  
 Kaiser Steel Corp., P. O. Box 217, Fontana, Calif.  
 Lone Star Steel Co., P. O. Box 307, Dallas 5, Tex.  
 National Steel Corp., Weirton Steel Div., Grant Bldg., Pittsburgh, Pa.  
 Newport Steel Corp., Newport, Kentucky.  
 Republic Steel Corp., Republic Bldg., 25 Prospect Ave., N. W. Cleveland 1, Ohio.  
 Sharon Steel Corp., Sharon, Pa.  
 Shenango Furnace Co., Oliver Bldg., Pittsburgh, Pa.  
 Tennessee Coal & Iron Div., U. S. Steel Corp., P. O. Box 599, Fairfield, Ala.  
 U. S. Pipe & Foundry Co., Birmingham, Ala.  
 U. S. Steel Corp., 525 Wm. Penn Plaza, Pittsburgh 30, Pa.  
 Wheeling Steel Corp., Wheeling, West Virginia.  
 Woodward Iron Company, Woodward, Ala.  
 Youngstown Sheet & Tube Co., Stambough Bldg., Youngstown 1, Ohio.

#### LEAD

American Metal Company, Ltd., 61 Broadway, New York 6, N. Y.  
 American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.  
 Bunker Hill & Sullivan Mining & Concentrating Co., Kellogg, Idaho.  
 The Consolidated Mining & Smelting Co., Ltd., Montreal, Canada.  
 Eagle Picher Co., Mining and Smelting Div., P. O. Box 910, Miami, Ohio.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 International Smelting & Refining Co., 25 Broadway, New York 4, N. Y.  
 Metal Traders, Inc., 67 Wall St., New York, N. Y.  
 National Lead Company, 111 Broadway, New York, N. Y.  
 Philipp Brothers, Inc., 70 Pine St., New York 5, N. Y.  
 St. Joseph Lead Co., 250 Park Ave., New York 17, N. Y.

C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.  
United States Smelting Refining & Mining Co., 75 Federal St., Boston, Mass.

### LEPIDOLITE

American Potash & Chemical Corp., 3030 W. 6th St., Los Angeles 54, Calif.  
Corning Glass Works, Corning, N. Y.  
General Electric Co., Nela Park, Cleveland, Ohio.  
Foots Mineral Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
Pittsburgh Corning Corp., Port Allegany, Pa.

### MAGNESITE AND BRUCITE

Basic Refractories, Inc., 445 Hanna Bldg., Cleveland 15, Ohio.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
Kaiser Aluminum & Chemical Corp., Kaiser Bldg., Oakland 12, Calif.  
Northwest Magnesite Co., 1800 Farmers Bank Bldg., Pittsburgh 22, Pa.  
Standard Slag Co., Gahna, Nev.  
Westvaco Products Div., Food Machinery & Chemical Corp., 405 Lexington Ave., New York 17, N. Y.

### MANGANESE ORE

(Consumers of Metallurgical-grade Manganese Ore)

Bethlehem Steel Co., Bethlehem, Pa.  
Buckeye Steel Castings, 2211 So. Parsons Ave., Columbus 7, Ohio.  
Colorado Fuel and Iron Corp., Pueblo, Colorado.  
Electro Manganese Corp., Knoxville, Tennessee.  
Electro Metallurgical Co., A Division of Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
E. J. Lavine & Co., 1528 Walnut St., Philadelphia 2, Pa.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
Keokuk Electro Metals Co., Keokuk, Iowa.  
National Paint and Manganese Co., Lynchburg, Virginia.  
Ohio Ferro-Alloys Corp., 100 Citizens Bldg., Canton, Ohio.  
Pittsburgh Metallurgical Co., Niagara Falls, New York.  
Tennessee Products and Chemical Corp., American National Bank Bldg., Nashville, Tennessee.  
Tenn-Tex Alloy and Chemical Corp., 500 1st American National Bank Bldg., Nashville 2, Tenn.  
United States Steel Co., 525 William Penn Place, Pittsburgh 30, Pa.

(Consumers of Battery and Chemical-grade Manganese Ores)

Acme Battery Co., 59 Pearl St., Brooklyn, N. Y.  
Burgam Battery Company, Freeport, Ill.  
Foots Mineral Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
General Dry Batteries, Inc., Cleveland, Ohio.  
General Electric Co., Nela Park, Cleveland, Ohio.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
National Carbon Co., P. O. Box 6887, Cleveland, Ohio.  
Olin Mathieson Chemical Corp., Winchester Repeating Arms Plant, New Haven 4, Conn.  
Ray-O-Vac Co., Madison, Wis.  
Tennessee Eastman Corp., Kingsport, Tenn.

### MERCURY

Allied Chemical & Dye Corp., The Solvay Process Div., P. O. Box 271, Syracuse, N. Y.  
American Cyanamid Co., General Explosives Div., 29 Rockefeller Plaza, New York 20, N. Y.  
American Meter Co., Erie, Pa.  
Automatic Steel Products, Inc., Mercury Clutch Div., 1201 Camden Ave., S. W., Canton 6, Ohio.  
Bailley Meter Co., 1052 Ivanhoe Rd., Cleveland 10, Ohio.  
J. T. Baker Chemical Co., Phillipsburg, N. J.  
F. W. Berk & Co., Inc., Woodridge Div., Box 38, Woodridge, N. J.  
Coast Chem. Div., 55 New Montgomery St., San Francisco, Cal.  
Carbide & Carbon Chemicals Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.  
L. D. Casik, Milford, Del.  
E. I. du Pont de Nemours & Co., Inc., Methods Div., Du Pont Bldg., Wilmington 99, Del.  
Foxboro Co., Foxboro, Mass.  
General Aniline & Film Corp., General Aniline Works Div., 435 Hudson St., New York 14, N. Y.  
General Color Co., 24 Avenue B, Newark 5, N. J.  
General Electric Co., Purchasing Dept., 1 River Road, Schenectady 5, N. Y.  
Mallinckrodt Chemical Works, Jersey City 5, N. J.  
Mathieson Chemical Corp., Mathieson Bldg., Baltimore 3, Md.  
Merck & Co., Inc., Lincoln Ave., Rahway, N. J.  
The Meroid Corp., 4281 Belmont Ave., Chicago 41, Ill.  
Metalsalts Corp., 290 Wagaraw Rd., Hawthorne, N. J.  
Minnesota Power Specialties Co., 2725 4th Ave. S., Minneapolis 8, Minn.; Brown Instrument Div., 4331 Wayne Ave., Philadelphia, Pa.  
Nepera Chemical Co., Inc., Yonkers 2, N. Y.  
Phillips Petroleum Co., Bartlesville, Okla.  
Public Service Electric & Gas Co., Electric Dept., 80 Park Place, Newark 1, N. J.  
Quicksilver Producers Association, 407 Sansome St., San Francisco 11, Calif.  
Thomas A. Edison, Inc., Primary Battery Div., Bloomfield, N. J.  
Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, N. J.  
Wyandotte Chemical Corp., Wyandotte, Mich.

### MICA

(Buyers of Muscovite Block, Film Mica, and Phlogopite Block Mica)

American Mica Insulation Co., 235 Parker Ave., Manasquan, N. J.  
American Mica Products Co., 17 East 48th St., New York 17, N. Y.  
Asheville Mica Co., P. O. Box 318, Newport News, Va.  
Cornell-Dubilier Electric Corp., 55 Cromwell St., Providence, R. I.  
Diamond Power Specialty Corp., P. O. Box 415, Lancaster, Ohio.  
Ecco High Frequency Electric Corp., 7929 Hudson Blvd., No. Bergen, N. J.  
Ford Radio & Mica Corp., 534-53rd St., Brooklyn, N. Y.  
General Electric Co., 1 River Road, Schenectady 5, N. Y.  
E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.

Industrial Mica Corp., 223 South Van Brunt St., Englewood, N. J.  
Leeds & Northrup Co., 4901 Stenton Ave., Philadelphia 44, Pa.  
Mica Fabricating Co., 53 Central Ave., Rochelle Park, N. J.  
Mica Insulator Co., Schenectady 1, N. Y.  
Micacraft Products, Inc., 701 McCarter Highway, Newark 5, N. J.  
Micamold Radio Corp., 1887 Flushing Ave., Brooklyn 37, N. Y.  
Radio Corp. of America, RCA Victor Div., Camden 2, N. J.  
Radiance Mica Co., 341-39th St., Brooklyn, N. Y.  
Spruce Pine Mica Co. and Mayland Mfg. Co., Spruce Pine, N. C.  
Sylvania Electric Products, Inc., Smethport, Pa.  
Western Electric Co., Inc., 195 Broadway, New York 7, N. Y.

### (Consumers of Mica Splittings)

Allis-Chalmers Manufacturing Co., 1126 So. 70th St., Milwaukee 1, Wisconsin  
American Electrical Heater Co., 6110 Cass Ave., Detroit, Michigan  
Cleveland Mica Co., 1360 Hird St., Lakewood, Ohio  
Continental-Diamond Fibre Co., Valparaiso, Indiana  
General Electric Co., 1635 Broadway, Fort Wayne 2, Indiana  
Mica Insulator Company, Schenectady 1, New York  
National Electric Coil Co., Columbus, Ohio  
Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh 30, Pa.

### MICA GRINDERS

(Buyers of Domestic Scrap Mica)

American Arizons Mines, Inc., Box 2040, Phoenix, Ariz.-Wet.  
Asheville Mica Co., P. O. Box 318, Newport News, Va.-Dry.  
Buckeye Mica Mills, Box 410, Buckeye, Ariz.  
Concord Mica Corp., 25 Chestnut St., Penacook, N. H.-Wet.  
Consolidated Feldspar Dept., International Minerals & Chemical Corp., Kona, N. C.-Dry.  
De-Weld Mica Corp., Spruce Pine, N. C.-Dry.  
Densen Mica Co., Newdale, N. C.-Dry.  
Diamond Mica Co., Spruce Pine, N. C.-Wet.  
The English Mica Co., Spruce Pine, N. C.-Wet.  
Franklin Mineral Products Co., Franklin, N. C.-Wet and Dry.  
The Funkhouser Co., Hartwell, Ga.-Dry.  
General Mining Associates, 700 Cathedral St., Baltimore 1, Md.-Dry.  
The Harris Clay Co., Spruce Pine, N. C.-Dry.  
Kings Mountain Mica Co., Inc., Kings Mountain, N. C.-Dry.  
Southern Mica Co., Johnson City, Tenn.  
U. S. Mica Co., Inc., Stamford, Conn.-Dry.  
Western Nonmetallics, Inc., Pueblo, Colo.-Dry.

### MOLYBDENUM CONCENTRATES

J. T. Baker Chemical Co., Phillipsburg, N. J.  
Electro Metallurgical Div., Niagara Falls, N. Y.  
Climax Molybdenum Co., 500 Fifth Ave., New York, N. Y.  
Crucible Steel Co. of America, Pittsburgh, Pa.  
Molybdenum Corp. of America, 500 Fifth Ave., New York, N. Y.  
Republic Steel Corp., Canton, Ohio  
S. W. Shattuck Chemical Co., Denver, Colo.

### NICKEL

American Smelting & Refining Co., 120 Broadway, New York, N. Y.  
Cosmo Metal Alloys Co., 275 Front St., New York, N. Y.  
Sulmet Alloys Co., Inc., Wellington St. and Erie R.R., Clifton, N. J.  
United States Smelting Refining & Mining Co., 1 State St., Boston, Mass.

### PERLITE

(Producers of Expanded Perlite)

Airlite Processing Corp., Bldg. 9, Air Base, Vero Beach, Fla.  
American Biltrock Co., 2001 W. Pershing Road, Chicago 9, Ill.  
Alstair Construction Service, Inc., 3518 Broadway St., New Orleans 18, La.  
Atlantic Perlite Co., 1919 Kenilworth Ave., N. E. Washington 19, D. C.  
Buffalo Perlite Corp., 1900 Sugg Road (Cheektowaga), Buffalo 21, N. Y.  
Florida Perlite Co., 5137 N. E. 2nd Ave., Miami 37, Fla.  
Gregg Products Co., 646 Chestnut St., S. W. Grand Rapids, Mich.  
Hasty Corp., 696 Montgomery Freeway, Chula Vista, Calif.  
McCure & Erickson Corp., 2416 Bedouan Ave., Los Angeles 22, Calif.  
Midwest Perlite Products, Inc., 1120 Railroad St., W. Des Moines, Iowa.  
Minerals Processing Corp., 520 Van Rensselaer St., Syracuse, N. Y.  
Minnesota Perlite Corp., 315 W. 86th St., Minneapolis 20, Minn.  
National Gypsum Co., 325 Delaware Ave., Buffalo 2, N. Y.  
Osark-Mahoning Co., Osark Chemical Plant, P.O. Box 449, Tulsa, Okla.  
Pancalite Pacific, Inc., 545 E. 99th St., Los Angeles 1, Calif.  
Paramount Perlite Co., 16238 S. Illinois St., Paramount, Calif.  
Peerless Perlite Co., 2807 So. Fairfax Ave., Los Angeles 10, Calif.  
Pennsylvania Perlite Corp., P. O. Box 694, Allentown, Pa.  
Redco, Inc., 11831 Vose St., North Hollywood, Calif.  
Rylox Corp. of Illinois, 1302 N. Oak St., Champaign, Ill.  
Silbrics Corp., 5901 W. 46th St., Chicago 36, Ill.  
U. S. Perlite Mfg. Co., 612 Flower St., Los Angeles 17, Calif.  
The Whittemore Co., Permalite Div., 25 Harrison St., Rosindale 31, Mass.

### PLATINUM

The American Platinum Works, 231 New Jersey R. R. Ave., Newark 5, N. J.  
Baker & Co., Inc., 113 Astor St., Newark 5, N. J.  
J. Bishop & Co. Platinum Works, Malvern, Pa.  
Bandy & Harman, 62 Fulton St., New York 7, N. Y.  
Johnson, Matthey & Co., Inc., 600 Fifth Ave., New York 20, N. Y.  
Montana Assay Office, 610 S.W. 2nd Ave., Portland 4, Ore.  
Pacific Platinum Works, 253 S. Broadway, Los Angeles 12, Calif.  
Wildberg Bros. Smelting & Refining Co., 742 Market St., San Francisco 2, Calif.  
Western Gold & Platinum Works, 589 Bryant St., San Francisco 7, Calif.

### PYRITE

American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.  
Anaconda Copper Mining Co., 25 Broadway, New York 4, N. Y.  
Bazuh Chemical Company, Baltimore, Maryland.



Davidson Chemical Corporation, 30 Hopkins Place, Baltimore 3, Maryland.  
 Foote Mineral Company, 18 West Chelton Ave., Philadelphia 44, Pa.  
 General Chemical Division, Allied Chemical & Dye Corp., P. O. Box 4640, Denver, Colorado.  
 E. A. Godoy & Co., Inc., 35 Broadway, New York 4, N. Y.  
 Helianth Phosphate Company, Savannah, Georgia.  
 Stauffer Chemical Company, 636 California St., San Francisco 3, Calif.

#### RARE-EARTH ORES

(Cerium ores, monazite sand, bastnaesite, other thorium-bearing ores)

Crane Co., 836 Michigan Ave., Chicago 5, Ill.  
 Lindsay Chemical Co., West Chicago, Illinois.  
 Mallinckrodt Chemical Works, 2nd and Mallinckrodt Sts., St. Louis 7, Mo.  
 Maywood Chemical Works, Maywood, N. J.  
 Minerals Refining Co., Murray, Utah.  
 Molybdenum Corp. of America, 600 Fifth Ave., New York, N. Y.  
 Rare Earths, Inc., R. D. #21, Paterson, N. J.

#### SPODUMENE

Corning Glass Works, Corning, N. Y.  
 Foote Mineral Co., 18 E. Chelton Ave., Philadelphia 44, Pa.  
 Lithium Corp. of America, Inc., Rand Tower, Minneapolis 2, Minn.  
 Maywood Chemical Works, Maywood, N. J.  
 Metallurgy Corp., 1330 Rand Tower, Minneapolis, Minn.  
 National Enameling and Stamping Co., 270 N. 12th St., Milwaukee, Wis.  
 Owens Corning Fiberglass Corp., Newark, Ohio.

#### STRONTIUM ORES

Associated Metals & Minerals Corp., 40 Rector St., New York, N. Y.  
 J. T. Baker Chemical Co., Phillipsburg, N. J.  
 Barium Products, Ltd., Modesto, Calif.  
 Barium Reduction Corp., Charleston, W. Va.  
 E. I. du Pont de Nemours & Co., Inc., 11th and Orange Sts., Wilmington, Del.  
 Foote Mineral Co., Inc., 13 E. Chelton Ave., Philadelphia, Pa. (minerals).  
 General Electric Co., 1 River Road, Schenectady, N. Y.  
 Chas. Hardy, 415 Lexington Ave., New York, N. Y.  
 Harshaw Chemical Co., 1935 E. 97th St., Cleveland, Ohio.  
 Hammel Chemical Co., 99 West St., New York, N. Y.  
 Jungman & Co., 157 Chambers St., New York, N. Y.  
 J. A. Samuel & Co., 228 Broadway, New York, N. Y.

#### TALC

(Producers and Grinders of Crude Talc, Pyrophyllite and Soapstone)

Alberene Stone Corp. of Va., Schuyler, Va.  
 American Minerals Co., 840 S. Mission Rd., Los Angeles, Calif.  
 Arkansas Talc Co., Inc., Bryant, Ark.  
 Bisco Ridge Talc Co., Inc., Henry, Va.  
 Carolina Pyrophyllite Co., Staley, N. C.  
 The Columbia Talc Co., Dalton, Ga.  
 Commercial Minerals Co., 319 Irwin St., San Francisco, Calif.  
 Eastern Magnesia Talc Co., Inc., 296 Bank St., Burlington, Vt.  
 Gouverneur Talc Co., Inc., Gouverneur, N. Y.  
 Huntley Industrial Minerals, Inc., Lava, Calif.  
 Industrial Minerals & Chemical Co., 6th & Gilman St., Berkeley, Calif.  
 W. H. Loomis Talc Corp., 223 E. Main St., Gouverneur, N. Y.  
 Minerals & Metals Corp., Murphy, N. C.  
 Southern Talc Co., Chatsworth, Ga.  
 Stauffer Chemical Co., P. O. Box 68, N. Portland, Ore.  
 United Feldspar & Minerals Corp., P. O. Box 2414, Greensboro, N. C.

#### TANTALITE (SEE COLUMBIT)

#### TIN

American Smelting and Refining Co., 120 Broadway, New York 5, N. Y.  
 Metal & Thermite Corp., 120 Broadway, New York 5, N. Y.  
 Federal Facilities Corp., 811 Vermont Ave., Washington 25, D. C.  
 C. Tennant, Sons and Co., Empire State Bldg., New York 1, N. Y.  
 Vulcan Refining Co., Seward, N. J.

#### TITANIUM MINERALS

(Titanium Metal Manufacturers—Ilmenite and Rutile)

Cramet Inc., 3800 N. Hawthorne St., Chattanooga, Tenn.  
 Dew Chemical Co., Midland, Mich.  
 E. I. du Pont de Nemours and Co., Inc., DuPont Bldg., Wilmington 98, Del.  
 Electro Metallurgical Co., Div. of Union Carbide and Carbon Corp., Ashtabula, Ohio.  
 Titanium Metals Corp. of America, 89 E. 42nd St., New York 17, N. Y.

(Pigment Manufacturers—Ilmenite)

American Cyanamid Co., Pigments Div., Bound Brook, N. J.  
 E. I. du Pont de Nemours and Co., Inc., DuPont Bldg., Wilmington 98, Del.  
 The Glidden Co., Chemicals-Pigments-Metals Div., 6401 Helena Ave., Baltimore 22, Md.  
 National Lead Co., 111 Broadway, New York 6, N. Y.

(Welding Rod Manufacturers—Ilmenite and Rutile)

Alloy Rods Co., P. O. Box 786, York, Pa.  
 American Brake Shoe Co., 230 Park Ave., New York 17, N. Y.  
 Harnischfeger Corp., 4400 W. National St., Milwaukee, Wis.  
 Steady Co., Whittier, Calif.  
 Westinghouse Electric Corp., 306 Fourth Ave., Pittsburgh, Pa.

(Alloy Manufacturers—Ilmenite and Rutile)

Aluminum Co. of America, 1200 Ring Bldg., Washington 6, D. C.  
 Titanium Alloy Manufacturing Co., Div. of National Lead Co., 111 Broadway, New York 6, N. Y.

Union Carbide and Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 Vanadium Corp. of America, 426 Lexington Ave., New York 17, N. Y.

#### (Dealers—Ilmenite)

Berkshire Chemicals, Inc., 420 Lexington Ave., New York 17, N. Y.  
 Foote Mineral Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
 C. Tennant, Sons and Co. of New York, 100 Park Ave., New York 17, N. Y.

#### (Dealers—Rutile)

Berkshire Chemicals, Inc., 420 Lexington Ave., New York 17, N. Y.  
 L. H. Butcher Co., 3628 E. Olympic Boulevard, Los Angeles 23, Calif.  
 Ceramic Color and Chemical Mfg. Co., 13th St. and Blockhouse Run, New Brighton, Pa.  
 Foote Mineral Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
 International Titanium Corp., 111 Broadway, New York 6, N. Y.  
 National Lead Co., Titanium Alloy Mfg. Div., Box C, Bridge Sta., Niagara Falls, N. Y.  
 Orefraction, Inc., 7425 Thomas St., Pittsburgh 8, Pa.  
 Phillip Bros., Inc., 70 Pine St., New York 5, N. Y.  
 C. Tennant Sons and Co. of New York, Empire State Bldg., New York 1, N. Y.  
 Vitro Mfg. Co., 69 Greenway Drive, Carls Sta., Pittsburgh 4, Pa.

#### TUNGSTEN CONCENTRATES

Bishop Concentrate & Cleaning Co., Bishop, Calif.  
 Brashear Alloy Steel Co., Div. of Continental Copper & Steel, Inc., Brashear, Pa.  
 Columbia Tool Steel Co., Chicago Heights, Ill.  
 Clifford Ach., 2700 Birch St., Alhambra, Calif.  
 E. Fernstrom, 648 West 3rd St., Tucson, Ariz.  
 Fansteel Metallurgical Corp., 2206 Sheridan Road, North Chicago, Ill.  
 Fifth Sterling Steel & Carbide Corp., McKeesport, Pa.  
 General Electric Co., Cleveland Wire Works, Lamp Dept., 1331 Char-don Road, Euclid 17, Ohio.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 Jessop Steel Co., Washington, Pa.  
 C. W. Jones, Bishop, Calif.  
 Kennametal, Inc., Latrobe, Pa.  
 Latrobe Steel Co., Latrobe, Pa.  
 Molybdenum Corp. of America, 600 5th Ave., New York, N. Y.  
 National Hardware and Supply Co., 3618 Ventura Ave., Fresno, Calif.  
 North Metal and Chemical Co., York, Pa.  
 Reading Chemical Co., Box 53, Wyomissing, Pa.  
 Reduction and Refining Co., Kenilworth, N. J.  
 Salt Lake Tungsten Co., 2160 Indiana Ave., Salt Lake City, Utah.  
 Shattuck Chemical Co., 1805 So. Bannock Street, Denver, Colo.  
 Simonds Saw and Steel Co., Lockport, N. Y.  
 Sylvania Electric Products Co., Tungsten & Chemical Division, Box 70, Towanda, Pa.  
 U. S. Vanadium Co., Div. of Union Carbide & Carbon Corp., 30 E. 42nd St., New York, N. Y.; Bishop, Calif.  
 Universal Cycles Steel Corp., Bridgeville, Pa.  
 Vanadium Alloy Steel Co., Latrobe, Pa.  
 Vulcan Crucible Steel Co., Alliquippa, Pa.  
 Wah Chank Corporation, Woolworth Building, New York 1, N. Y.  
 Westinghouse Electric Corp., 1-17 MacArthur Ave., Bloomfield, N. J.

#### URANIUM-VANADIUM ORES

American Smelting and Refining Co. (Agent for U. S. Atomic Energy Commission), Edgemont, S. D.; Monticello, Utah; Marysville, Utah; Moab, Utah; White Canyon, Utah; Riverton, Wyo.  
 Anaconda Copper Mining Co., Bluewater, New Mexico.  
 Climax Uranium Co., Grand Junction, Colo.  
 Kerr-McGee Oil Industries, Inc., Shiprock, N. Mex.  
 Metallurgy, Inc., 99 Park Ave., New York, N. Y.  
 U. S. Vanadium Co., Rifle, Colo.; Uravan, Colo.; Thompsons, Utah.  
 Vanadium Corporation of America, Durango, Colo.; Naturita, Colo.  
 Vitro Chemical Co., 600 W. 33rd St., Salt Lake City, Utah.

#### ZINC

The American Metal Co., Ltd., 61 Broadway, New York 6, N. Y.  
 American Smelting & Refining Co., 120 Broadway, New York 5, N. Y.  
 American Zinc Co. of Illinois, 1600 Paul Brown Bldg., St. Louis, Mo.  
 Anaconda Copper Mining Co., 25 Broadway, New York 4, N. Y.  
 Associated Metals & Minerals Corp., 75 West St., New York 6, N. Y.  
 Athletic Mining & Smelting Co., Fort Smith, Ark.  
 E. I. du Pont de Nemours & Co., 1007 Market St., Wilmington 98, Del.  
 Eagle-Picher Co., Mining & Smelting Div., Miami, Okla.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 W. E. Grace & Company, Hanover Square, New York, N. Y.  
 The Hegler Zinc Company, Danville, Ill.  
 International Minerals & Metals Corp., 11 Broadway, New York 4, N. Y.  
 Matthiessen & Hegeler Zinc Co., Le Salle, Ill.  
 Metal Traders, Inc., 67 Wall St., New York, N. Y.  
 New Jersey Zinc Co., 160 Front St., New York 7, N. Y.  
 Philipp Brothers, Inc., 70 Pine Street, New York 5, N. Y.  
 The Sherwin Lead Co., 250 Park Ave., New York 17, N. Y.  
 The Sherwin-Williams Co., Quarz Smelting & Mining Division, 181 Prospect Ave., N.W., Cleveland 1, Ohio.  
 Sullivan Mining Co., Box 289, Kellogg, Idaho.  
 C. Tennant, Sons & Co., Empire State Bldg., New York 1, N. Y.  
 U. S. Steel Corp., 525 William Penn Place, Pittsburgh 30, Pa.

#### ZIRCON

F. W. Berk & Co., Woodbridge, N. J.  
 Berkshire Chemicals, Inc., 420 Lexington Ave., New York 17, N. Y.  
 Cohart Refractories Co., Louisville, Kentucky.  
 Electro Metallurgical Div., Union Carbide & Carbon Corp., 30 E. 42nd St., New York 17, N. Y.  
 Foote Mineral Co., 18 W. Chelton Ave., Philadelphia 44, Pa.  
 E. A. Godoy & Co., Inc., 25 Broadway, New York 4, N. Y.  
 International Titanium Corp., 120 Broadway, New York 5, N. Y.  
 Metal & Thermite Corp., 100 E. 42nd St., New York 17, N. Y.  
 Metallurgy, Inc., 100 Park Avenue, New York 17, N. Y.  
 Orefraction, Inc., 7505 Meade St., Pittsburgh, Pa.  
 Titanium Alloy Mfg., Div. National Lead Co., 111 Broadway, New York 6, N. Y.



# HOW TO USE your Pre-Filed Catalog Section, The Buyer's Guide For Mine-Mill-Smelter Equipment

- Keep the catalog section on your desk for ready reference.
- To find the manufacturer of a specific product: Look under the product heading in Section I of the yellow pages. All principal manufacturers of specialized mine-mill-smelter equipment are listed.
- Next, refer to the manufacturer's catalog or advertisement for further product description. Advertisers are listed in bold face type.
- For complete information on any product, fill-out the attached postage cards.
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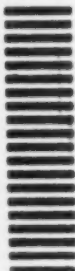
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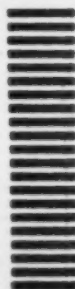
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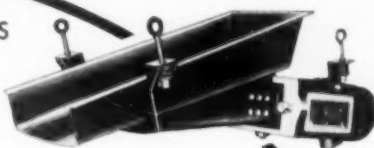
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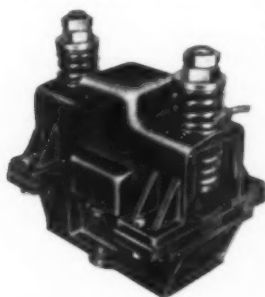
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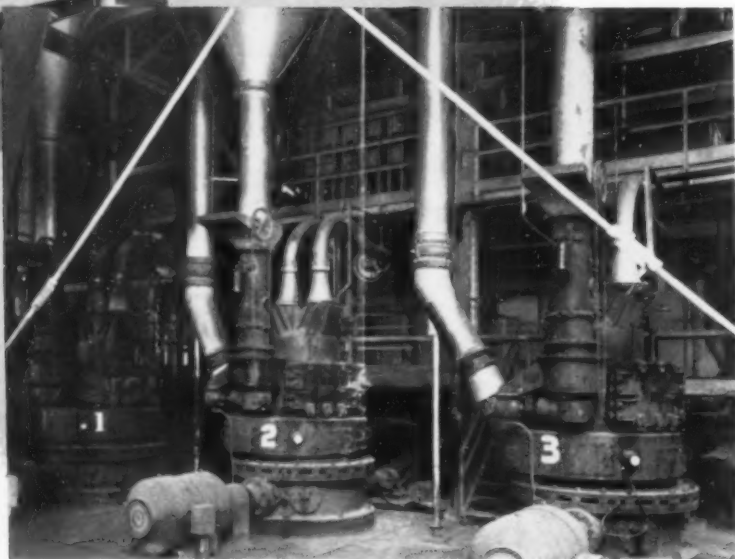
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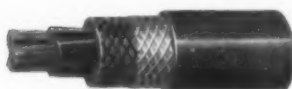
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# Standard Engineer's Field Report

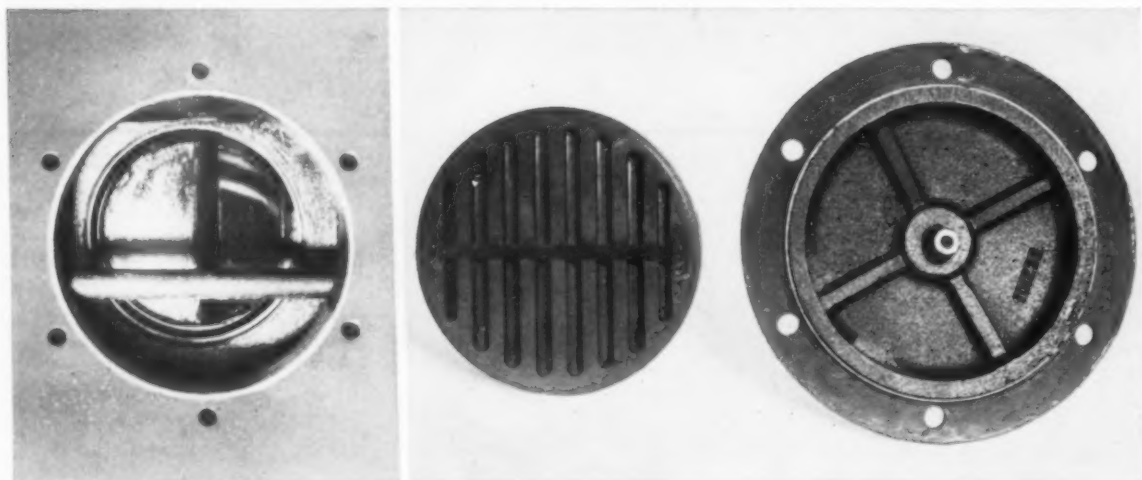
CASE HISTORY

*Calol Multi-Service Oils*  
LUBRICANT

LOCATION

*Arizona*

## Compressor valve parts free of deposits after working 40,680 hours in constant dust



NOTE CLEANLINESS of this valve port, channel valve and cover (left to right) when removed for first time from a two-stage air compressor...after 40,680 hours of work! Lubricated with Calol Multi-Service Oil since installation 11 years ago, the unit supplied air—5000 cubic feet per minute—for a giant Arizona copper mine. Compressor was housed in open shed where dust and grit were always present in the air...yet there was practically no wear or formation of deposits. Since moved to another mine site, the compressor still has all its original parts.

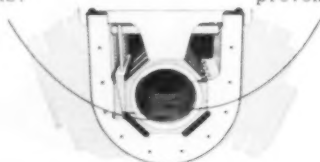
Calol Multi-Service Oils keep wear rates low and carbon deposits to a minimum in any type of recip-

rocating compressor. Also recommended for pumps, diesel engines and enclosed gears. These oils are available in several different grades to meet all conditions and requirements.

### Why CALOL Multi-Service Oils cut deposits & costs

Contain oxidation-resistant compounds.

Detergent keeps contaminants suspended in oil, inhibitor prevents foam.



Stay on "hot-spots" . . . cover surfaces rapidly and uniformly.



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STANDARD OIL COMPANY OF TEXAS  
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# PRECISION RADIATION INSTRUMENTS, INC.

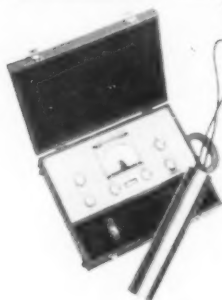
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## MODEL 118

### "Royal Scintillator"



A scaler, ratemeter and Scintillation Counter, the "Royal" is the finest instrument available. Designed for use in airborne or motor vehicle surveys. Has extremely high counting rate. Supplied with extra meter and extension meter cable. For OIL-LABORATORY-URANIUM use.

#### SPECIFICATIONS

Ranges... .01, .025, .05, .1, .25, 1 MR/HR  
Sensitivity.....Gamma  
Size.....13" x 17" x 5"  
Weight.....25 lbs.  
Shipping weight.....45 lbs.  
Price complete, ready to use... \$1995.00

## MODEL 111B

### "Deluxe Scintillator"\* AEC #5BX11A



Portable scintillation counter. Many times more sensitive than Geiger counters. Lightweight, simple to operate. Detects at depths of a few feet to a few hundred feet depending on conditions. Primarily for URANIUM detection. Shockproof, waterproof, tropicalized.

#### SPECIFICATIONS:

Probe size.....3 1/4" x 13 1/2"  
Probe weight.....3 3/4 lbs.  
Battery box size.....3" x 4 1/2" x 5 1/2"  
Box weight.....4 lbs.  
Ranges......025, .05, .5, 2.5, and 5 MR/HR  
Shipping weight.....13 lbs.  
Price complete.....\$495.00

## MODEL 115

### "Super Scintillator"\* AEC #5PX11B



A deluxe version of the Model 111, the 115 may be used for airborne or motor vehicle surveys. Can be used with Recorder. Primarily for URANIUM detection.

#### SPECIFICATIONS

Carrying case size.....5" x 11" x 14 1/2"  
Weight of complete instrument.....16 lbs.  
Shipping weight.....26 lbs.  
Price complete.....\$595.00

## MODEL 120

### "Drill Hole Geiger Counter"



A super sensitive Geiger Counter that has been especially designed for making radioactive measurements in drill holes as deep as 1000 feet. It can also be used for surface URANIUM prospecting. Comes with one probe for drill holes and one for surface exploration.

Price complete.....\$289.50  
Including a 50 ft. cable  
Additional cable per ft......25

## MODEL 117

### "Special Scintillator"\*



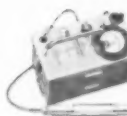
A highly sensitive Scintillation Counter at a moderate price. An ideal field instrument because of its ruggedness, compactness and light weight. Industrial, Laboratory, or Uranium use.

#### SPECIFICATIONS

Ranges......025, .05, .25, .5, 2.5 and 5 MR/HR  
Sensitivity.....Gamma  
Size.....4 1/2" x 7 1/4" x 7"  
Weight.....6 1/4 lbs.  
Shipping weight.....10 1/2 lbs.  
Price complete.....\$299.50

## MODEL 107

### "Professional Geiger Counter"



#### AEC #SGM49B

A Geiger Counter of the highest sensitivity, accuracy and stability. Has external probe. The best Geiger Counter made for field work. For use in Uranium detection, Civil Defense and Laboratory.

#### SPECIFICATIONS

Size approx.....3 1/2" x 4 1/2" x 6 1/2"  
Weight approx.....6 lbs.  
Sensitivity.....Beta, Gamma  
Ranges.....20, 2, and .2 MR/HR  
Shipping weight.....8 lbs.  
Price complete.....\$139.50

## MODEL 106

### "Lucky Strike Geiger Counter"



#### AEC #SGM49A

A Geiger Counter designed for field prospecting under rugged conditions. High sensitivity makes it possible to detect even small deposits of URANIUM and to estimate the quality and quantity of ore in the field. Lightweight, compact, and weatherproof.

#### SPECIFICATIONS

Size approx.....3 1/2" x 4 1/2" x 6 1/2"  
Weight approx.....5 lbs.  
Sensitivity.....Beta, Gamma  
Ranges.....20, 2, and .2 MR/HR  
Shipping weight.....7 lbs.  
Price complete.....\$99.50

## MODEL 108

### "Snooper"



Sensitive as some of the larger Geiger Counters, the 108 fits easily in hip pocket or pack. Requires no experience to operate. Comes complete with earphones, ore sample and instruction booklet.

#### SPECIFICATIONS

Size approx.....1 1/2" x 3" x 5"  
Weight approx.....1 1/4 lbs.  
Shipping weight.....2 lbs.  
Price complete.....\$29.95

\*REG. U. S. PAT. OFF.

The instruments listed above do not locate metals. Send direct for information on our complete line of metal ore and metal object locators.



Contact your nearest dealer for complete catalog or write direct to:

# PRECISION RADIATION INSTRUMENTS, INC.

2235 MWD S. LA BREA AVENUE • LOS ANGELES 16, CALIFORNIA

WORLD'S LARGEST MANUFACTURER OF PORTABLE RADIATION INSTRUMENTS

# MARTINDALE ELECTRIC CO.

1332 HIRD AVE.

CLEVELAND 7, OHIO

## MARTINDALE COMMSTONES



Made in 5 grades for commutators and brass or copper slip rings and 3 grades for cast iron or steel slip rings in all necessary styles and sizes.

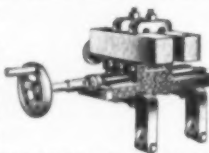
### TYPE "C" COMMSTONE HOLDER



Holds Commstones rigid and true for concentric resurfacing of commutators and slip-rings while running at normal speeds in their own bearings. Grinds commutators up to 4 1/2" wide. Used with two Commstones in stone holder or one Commstone in 2" box.

### COMMUTATOR GRINDING TOOLS

For grinding larger eccentric commutators. Made in any length from 6" to 48". Price for lengths of 10" or less, complete with mounting supports and carrying case, \$104.50. For over 10" add \$1.65 for each additional inch. Uses 2"x2"x8" Keystone Type Martindale Commstones. Also made with right angle drive.



### MARTINDALE PROTECTIVE MASKS



#### Weigh less than 1/2 ounce

Clean, cool, comfortable. Furnish excellent protection against non-toxic dusts except free silica. Replaceable cotton pads are inexpensive and sanitary.

Masks No. 1 std. wt. 30 ea.  
Refills No. 1 std. wt. 02 ea.  
Masks No. 2 hvy. wt. 02 1/2 ea.

#### Discounts

Less than \$10.00 list ..... Net  
\$10.00 to \$24.99 list ..... 10%  
\$25.00 to \$49.99 list ..... 15%  
\$50.00 or over ..... 20%

## MICA UNDERCUTTERS FOR SLOTING COMMUTATORS

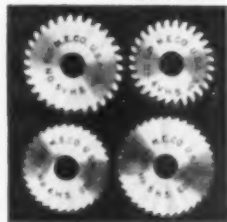
Nine Motor and Air Driven Types



Model M Mica Miller illustrated is a powerful, light weight, low cost, easy to use Undercutter, operating from 1/5 h.p. Universal motor. Available with small, medium, or heavy-duty head (interchangeable). Also available with air motor or flexible shaft drive. Cuts either "V" or "U" slot rapidly and accurately.

Write for description and prices on 8 other motor and air driven types for undercutting all sizes of commutators from the smallest to the largest.

## MICA SAWS AND "V" CUTTERS



We carry a complete line of all sizes of high-speed steel undercutter saws and "V" cutters for immediate shipment.

## ARMATURE WEDGE Remover



The coarse teeth on this tool bite firmly into wood and fibre wedges and save time in removing them quickly. Price \$3.75.

## ARMATURE WEDGE DRIVERS



Has outer shell made of brass to avoid rust. Driving pin made from steel. 11 sizes.

## HANDLE TYPE COIL TAMPERS



Made with 12" handle will either pry or hammer coils in place. Spoon shaped handle will press ends of coil in position.  
No. 1—3/16" x 7/8" face ..... \$2.80  
No. 2—5/16" x 1-1/4" face ..... 3.00  
No. 3—3/8" x 2" face ..... 3.20

## MARTINDALE GROWLERS

Portable  
Growler  
Type U-2



This universal adjustable growler can be used as an external growler for armatures (from 2" dia. dia.) and internal growler for stators (from 5/8" dia. up). 110 volt, 60 cycle \$44.00. Write for prices on five other types.

## MARTINDALE WHEEL AND GEAR PULLER



Adjustable arms pull straight without squeezing the work. Set screws prevent spreading. Made in 2 styles and 4 sizes up to 24" diameter.

## RECIPRO-TOOL



Permanently engraved letters, numbers, symbols, etc., on practically any hard or semi-hard material such as glass, ceramics, plastics, stone, iron, brass, aluminum, wood, etc. This powerful tool is ruggedly constructed for use on 115 Volt, 60 Cycle, A.C. Easy to operate. Available with hardened alloy, tungsten carbide, or diamond-tipped bit.

## BLOWERS AND VACUUM CLEANERS



Martindale Blowers are available in 3 sizes from 1/4 to 1 1/2 H.P. Suction attachments are made for all sizes. Write for information on other blowers.

## V.A.O. TESTER

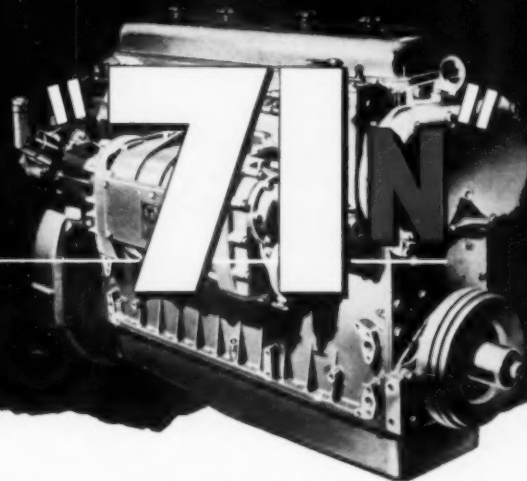


Rugged dependable instrument for bench or field use; 5" meter, four testing ranges: Volts, AC and DC; 0-2.5, 0-10, 0-50, 0-250, 0-1000; Amperes, DC only; 0-10; Ohms; 0-1000, 0-10,000; Megohms; 0-1, 0-100. Complete with testleads. Heavy Neolite carrying case is available.

Send for complete 64-page Catalog of Industrial Maintenance, Safety and Production Equipment.



WE SHOULD  
CALL IT *the*



**"N" FOR NEW—New Where It Counts Most**

You don't have to be an old-timer to remember when the first General Motors Series 71 Diesel was introduced. We called it the "71" in 1938 and we call it the "71" today.

But in 17 years these design improvements from top to bottom have given operators higher horsepower, lower fuel consumption and longer engine life. And now, a whole series of new improvements has made this fast-stepping, compact, 2-cycle Diesel better than ever.

**NEW 17 TO 1 COMPRESSION** gives better fuel economy, squeezing more power from every gallon of fuel.

**NEW "FIGURE 8" CYLINDER LINERS** give you a cleaner burning, more efficient engine. Air intake area is increased 32% for more complete fuel burning and better exhaust.

**NEW IMPROVEMENTS IN PISTON PIN, PIN RETAINER AND CAM FOLLOWER DESIGN** mean longer life, less maintenance cost. High-valve unit injectors last longer because the valve assembly is away

from high cylinder temperature areas. Hard-chrome steel "Lite-Tite" piston rings resist wear; are tougher and more flexible and give many more hours of service.

And—best of all—in your next overhaul you can incorporate any or all of these new improvements in any GM Series 71 Diesel engine you're operating today. "The Inside Story" tells you how these new improvements can help cut your costs and speed your jobs. Mail the coupon today for your copy.

**DETROIT DIESEL ENGINE DIVISION**

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.

*It Pays to STANDARDIZE on*



**Write For Booklet**

DETROIT DIESEL ENGINE DIVISION  
General Motors Corporation  
Detroit 28, Michigan

*Please send me booklet "The Inside Story"*

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

City & State: \_\_\_\_\_



*Wise old owl says...*

**Get Self-Liquidating\***

**\*"Canton" Mining Equipment**

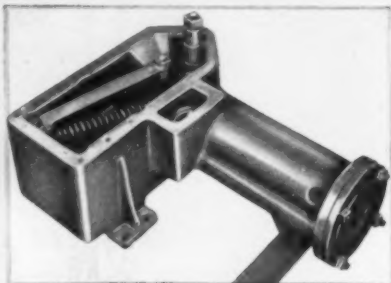


The famous "Canton Automatic Mine Door" snaps open, snaps shut. Eliminated Trapper Boys years ago, saves lives, saves power costs, starting and stopping trips.

For over half a century, Canton Equipment has saved lives, increased output, made money for operator.



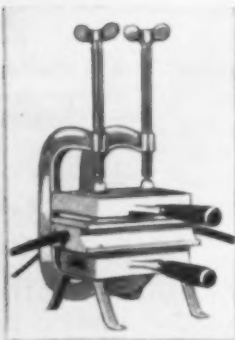
Canton Quick-on Cable Splicer. Reduce down time. Just pound around joined meshed ends of cable and go back to work. No special tools required. A coupling pin or hammer will do.



Canton Electri-Throw  
Dependable Switch Throw  
Throws switches automatically. No more hazards of men jumping off and on moving trips. Full trips go through at full speed. More tons of ore taken out, more profit per shift.



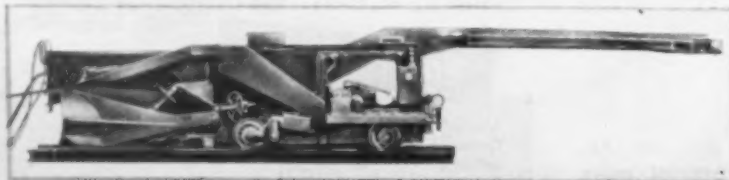
Model 30 Track Cleaner  
Specially designed for fast cleaning. Quick acting hydraulic adjusting. American Mine Door Company tailors the machine for 24" to 48" track gauge, and from 30' up in height. Amortized in a few months.



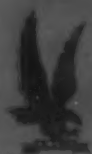
Canton Cable Vulcanizer makes neat non-sag joint, stronger than original cable with "Canton" Cable Splicers. Save time. Save money.



"Canton" Car Transfer  
Leads entire train on a single track. No alterations whatever to the main track. Less rib to shoot than for jump switch. No hazards of cherry picker. Car always on wheels.



The Rugged "Canton" Model 40 Track Cleaner. Tailored to your mine from 40' up in height. The "Canton" Track Cleaners save hundreds of dollars per mile in track cleaning costs. Pay for themselves in short time. Clean all mines, hard and soft coal mines, iron and copper, potash and salt mines.



**the AMERICAN MINE DOOR COMPANY**

2071 Dueber Ave., Canton 6, Ohio

Let us install a "Canton" product for you. Pay us out of savings.

See us at the Cleveland Show, Booth No. 1010

**Sprague & Henwood's  
ORIENTED  
Diamond Bits  
Cut Faster—  
—Last Longer  
Cost No More**



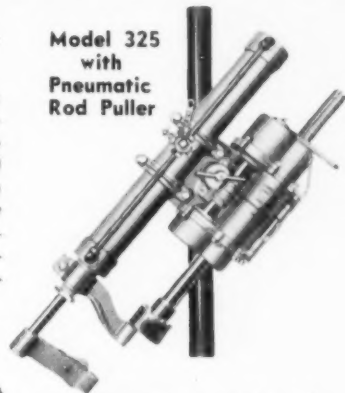
**The MOST  
ECONOMICAL  
DIAMOND  
BITS Ever  
Produced**

**A**FTER extensive comparative tests, conducted in cooperation with the U. S. Bureau of Mines, had proved that drill diamonds cut much faster and last much longer when "oriented" in the matrix with their hardest edges or "vectors" toward the work we decided that random setting was obsolete. Since then we have standardized on oriented diamond bits and have produced **thousands**—in a wide variety of types and sizes, with both cast- and powdered-

metal matrices — to meet every diamond drilling requirement.

In terms of footage costs, we believe these to be the most economical diamond bits ever produced, and invite inquiries on that basis. Bulletin 320 illustrates all types and gives complete working data. Write for a free copy and tell us about your drilling conditions. Our experienced executives welcome opportunities to make money-saving suggestions.

**Model 325  
with  
Pneumatic  
Rod Puller**



## HIGH-SPEED DIAMOND-DRILLING MACHINES

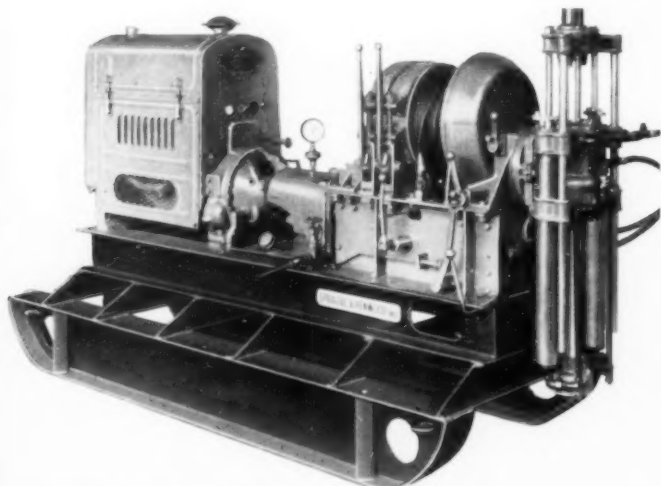
To secure best possible results from our Oriented diamond bits, you need drilling machines with plenty of power and a wide range of both speed and feed. Sprague & Henwood machines not only meet these requirements but, in addition, can be relied upon for many years of dependable trouble-free service. Modern designs, rugged construction

and alloy-steel wearing parts permit long periods of continuous high-speed operation under normal conditions.

Write us regarding any requirement for a diamond drilling machine. Our recommendations are based on actual results obtained in our own world-wide contract drilling operations. Illustrated bulletins mailed promptly on request.

**Air Operated Machines for  
Diamond Drilling Underground**

Model 325, shown above, and Model 550 (similar but larger) are both driven by four-cylinder radial-type air motors and have ample capacity for fast steady operation of Size "EX" drill bits and rods. Equally suitable for Sizes "AX" and "BX", at lesser speeds and depths. Write for Bulletin No. 340.



**MODEL 142 Diamond Core Drilling Machine  
For Deep, or Large-Diameter, Core Drilling Jobs**

Built "Like a Battle Ship" for tough service and capable of bringing out good cores at far greater depths than its rated capacity, when especially equipped for deep drilling. Rated Capacity—"EX"—2000'; "AX"—1650'; "BX"—1200'; "NX"—1000'. Write for Bulletin No. 160.



**MODEL 40-C Diamond Core Drilling Machine  
The Best Machine for Most Core Drilling Jobs**

Designed for greatest possible all-round value and performance on jobs up to a thousand feet in depth, no matter how difficult the operating conditions. Rated Capacity—"EX"—1000'; "AX"—800'; "BX"—600'; "NX"—500'. Write for Bulletin No. 185.

**SEE OTHER SIDE OF THIS PAGE FOR FURTHER SPRAGUE & HENWOOD INFORMATION**

# CONTRACT *Anywhere* DIAMOND *Any Time* DRILLING

**F**OR more than seventy years Sprague & Henwood, Inc. has been a leader in the field of Contract Diamond Drilling. During this long period of time our crews have completed thousands of contracts successfully in every corner of the globe—under every conceivable operating condition. Today we have a large force of expert operators and an ample supply of modern equipment, so that we can undertake almost any job—anywhere—on short notice.

Besides exploratory core drilling, from the surface or underground, our service includes blast-hole drilling, directional drilling, foundation test drilling, grout-hole drilling and pressure grouting. Estimates, and constructive suggestions when possible, submitted promptly on request.

## ACCESSORY EQUIPMENT

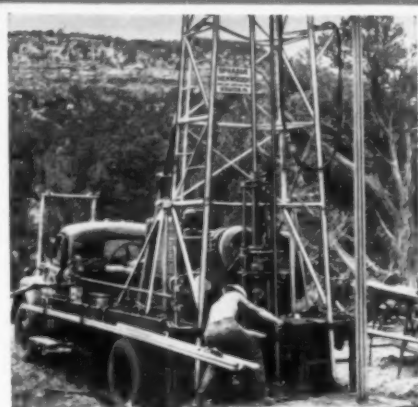
### for Diamond Core Drilling and Soil Sampling

In order to meet the requirements of our own contract drilling crews, we are obliged to supply a wide variety of accessory equipment and to carry all of the more important items in stock for immediate shipment. The same prompt service is available to other diamond drill operators and ordering is made easy by a 28-page catalog, No. 31-F, which gives all necessary information, including illustrations, piece numbers, weights, and code words for convenience when ordering by wire or cable. Every operator of a diamond drilling rig should have a copy of Bulletin No. 31-F and we'll send one free of charge on request.

Soil Sampling Devices and Equipment are illustrated and cataloged in our Bulletin No. 75-A (20 pages) which also contains helpful information regarding approved methods of recovering samples for Soil Investigation and Foundation Testing. Write for a free copy if you can use it.

## COMPLETE DRILLING RIGS

On receipt of adequate information regarding the anticipated operating conditions and requirements, we will furnish a complete list of all necessary equipment for successful diamond core drilling and will quote on delivery of equipment anywhere in the United States or in any other country. Long experience in furnishing equipment for our own drilling crews enables us to include items that are often overlooked but which are indispensable under certain conditions—especially for deep core drilling.



A Sprague & Henwood Drilling Rig in the Colorado Uranium Field.

## Partial List of Accessory Equipment Available

Auger Bits, all types	Hoisting Hooks
Balls, lifting	Hoisting Plugs
Ball-Bearing Water-swivels	Hoisting Plug Reducers
Bits, Diamond	Hoisting Rings
Bits, Blank	Hose, Waterswivel
Bits, Chopping	Hose, Suction
Bushings, Rod & Casing	Jar Lengths
Casings, Flush Coupled	Jaws, Safety Clamp
Casing Taps	Lifters, Rod
Clinometers	Mud Bits
Corebarrels, all types	Pilot Reamers
Corebarrel Taps	Plugs, Hoisting
Core Lifters	Pressure Testers
Couplings, Rod	Protectors, Casing
Derrick Sheaves	Reamer Shells
Drill Rods	Reducers, Rod
Drive Hammers	Rods, Drill
Drive Heads	Rod Couplings
Drive Pipe	Rod Taps
Drive Pipe Couplings	Rose Bits
Drive Shoes	Safety Clamps
Extensions, Core Barrel	Sawtooth Bits
Fishing Tools	Sheave Wheels
Fishtail Bits	Soil Samplers
Flush Coupled Casing	Subs
Foot Safety Clamp	Taps, Fishing
	Testers, Sample
	Testers, Pressure
	Wash Plugs
	Water Swivels

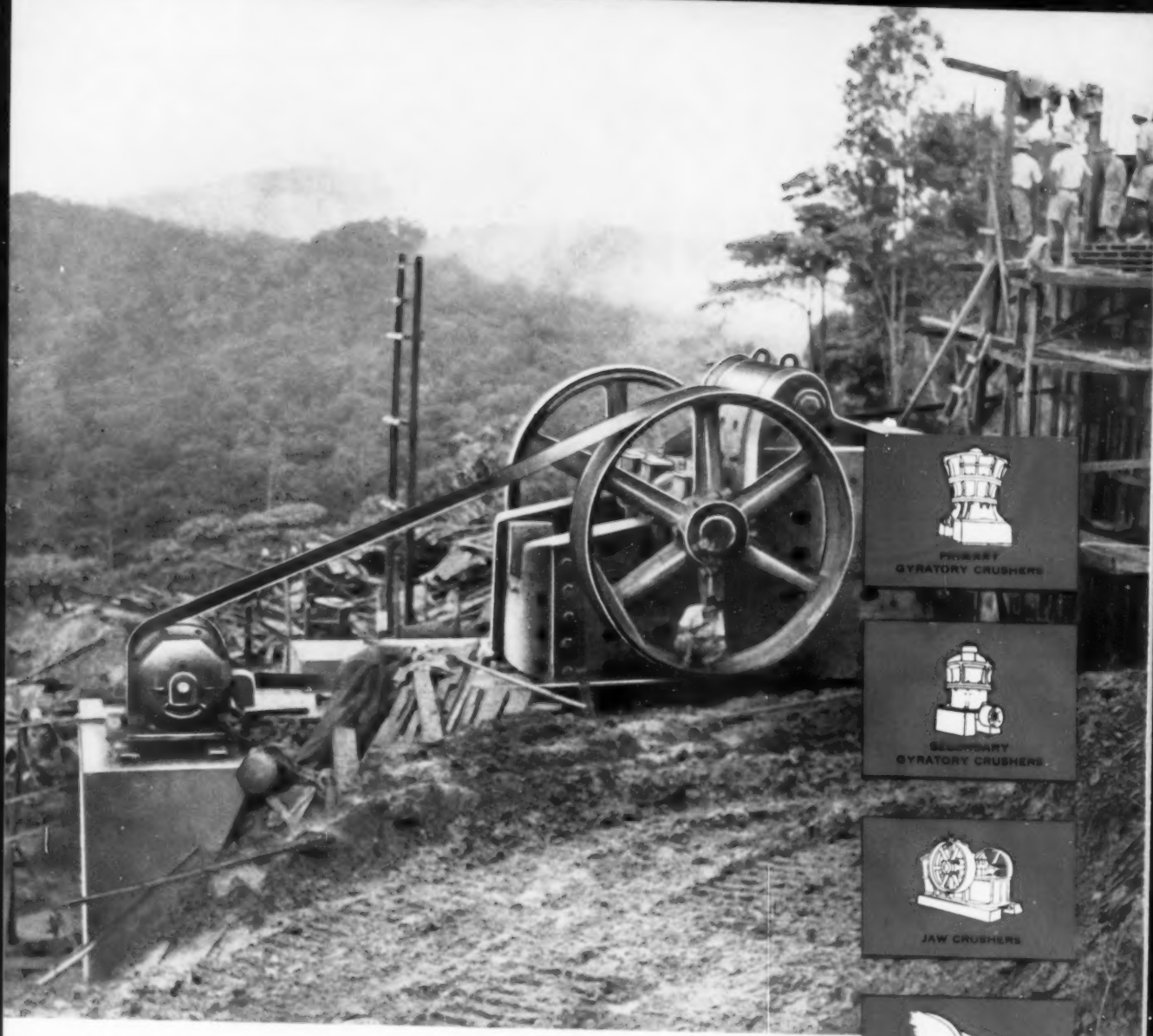
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EXPORT REPRESENTATIVE: PHILIPS EXPORT CO., 100 EAST 42nd ST., NEW YORK 17, N. Y.





PRIMARY  
GYRATORY CRUSHERS



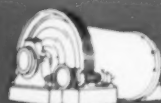
SECONDARY  
GYRATORY CRUSHERS



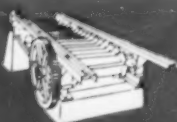
JAW CRUSHERS



ROTARY ROLL,  
COOLING, BLANDERS



GRINDING MILLS



APRON AND  
BUCKET ELEVATORS

# Traylor

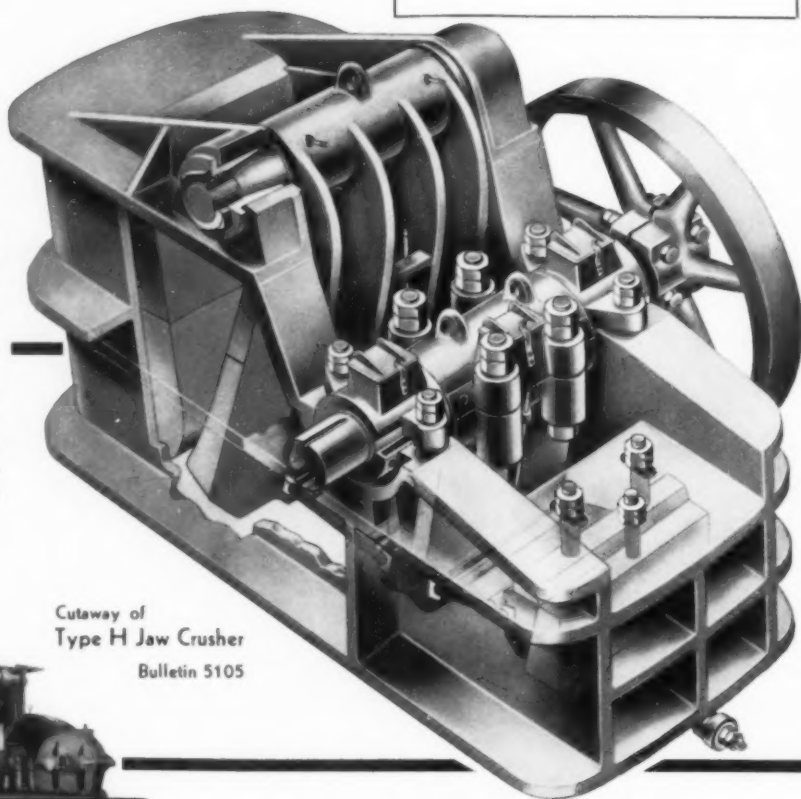
**MACHINERY FOR THE MINING INDUSTRY**

**A TRAYLOR LEADS TO GREATER PROFITS**

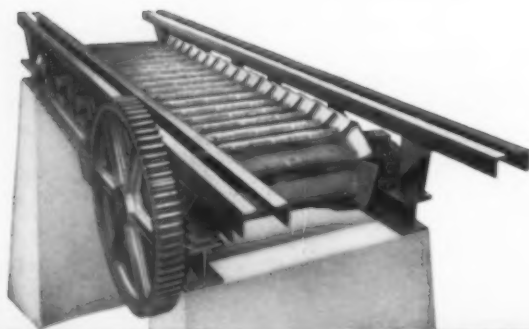
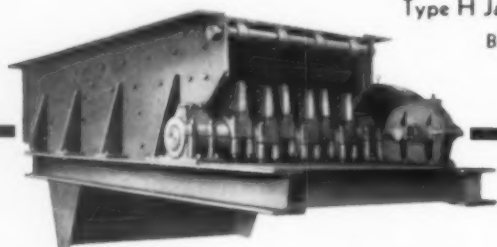
# Traylor Jaw Crushers

Traylor CURVED Jaw Plates are scientifically proportioned so that the faces are opposed to the line of motion. Lifting and churning is reduced . . . power is used more efficiently. Choking is prevented by the increasing size of each succeeding feeding zone. Traylor curved jaw plates outwear conventional plates, often by as much as 3 to 1.

These jaw crushers are of advanced design, built to stand up under hard usage. Numerous improvements give them high efficiency and great capacity. Their features include—a patented swing jaw suspension and curved jaw plates, which allow for greater capacity at finer setting and longer life of wearing plates. All frames are reinforced at critical points to provide strength without excessive weight. When it is necessary to make frames in more than one piece, the sections are joined in a manner to preserve single casting rigidity. All parts are readily accessible.



Cutaway of  
Type H Jaw Crusher  
Bulletin 5105



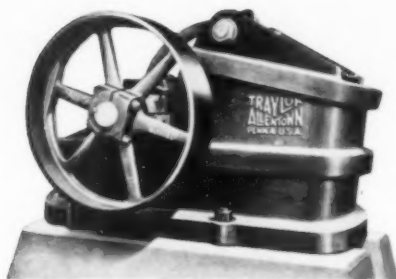
## GRIZZLEY FEEDERS

This is a machine with a bed composed of several sets of bars placed on edge. Adjoining bars, attached to opposing eccentrics, produce an alternate, reciprocal movement which advances the material to the crusher. Undersize is separated by falling between these bars which are topped with renewable manganese plates suitably slotted for the desired screening action. The churning motion provides a steady feed of material for high crusher efficiency. Made in sizes from 3'-0" x 6'-0" to 10'-0" x 20'-0".

## APRON FEEDERS

These are heavy duty feeders recommended for use with all types of crushers. Heavy, cast steel, over-lapping aprons and side flanges present a solid surface that resists the impact of large lumps and minimizes sifting. Aprons are supported full width by large rollers mounted in rigid frames of steel beams. Built in widths of 30" to 84" in any length required.

Write for Bulletin # 2114.

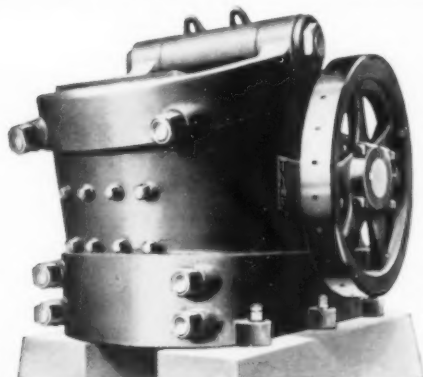


TYPE  
**M**  
CRUSHER  
SPECIFICATIONS  
Bulletin 1124

## TYPE M CRUSHER SPECIFICATIONS

Size Opening	Approx. Shipping Weight	Approx. Capacity Per Hour When Discharge Opening Is Set To Sizes Shown Below—In Tons of 2000 Lb.—Materials Weighing 100 Lbs. Per Cubic Foot When Crushed																Max. H.P. Required
		Max. R.P.M. Driving Pulley	CLOSED SETTING—INCHES															
			7 1/8	1	1 1/8	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4	4 1/2				
(Inches)	(Lbs.)																	
8 x 12	8,250	300	4	5	6	7	8	9	10								10	
10 x 16	11,700	300	10	11	12	14	16	18	20	23	34						15	
10 x 20	12,500	300		14	15	17	20	22	25	28	34						20	
15 x 24	25,300	275			21	23	27	31	34	38	42	50					30	
15 x 30	27,000	275				29	33	38	43	48	53	62	72				40	
18 x 36	51,700	250					46	53	61	69	77	93	108	125			60	
24 x 36	70,400	250						68	77	86	95	114	132	150	169		75	

\*Horsepower varies with the size of the product, output and hardness of material.

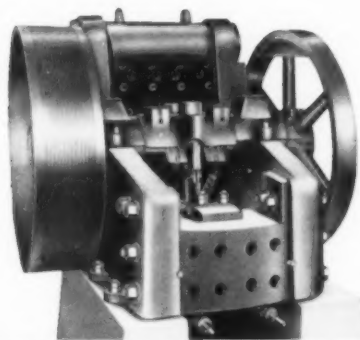


TYPE  
**R**  
CRUSHER  
SPECIFICATIONS  
Bulletin 1123

## TYPE R CRUSHER SPECIFICATIONS

Size Opening (Inches)	Approx. Shipping Weight (Pounds)	Max. R.P.M. Driving Pulley	Approx. Capacity Per Hour When Discharge Opening Is Set To Sizes Shown Below—In Tons of 2000 Lb.— Materials Weighing 100 Lbs. Per Cubic Foot When Crushed														Max. H. P. Required
			CLOSED SETTING—INCHES														
			2	2½	3	3½	4	4½	5	6	7	8	9				
36 x 42	125,000	175	120	140	160	180	200	225	250								115
36 x 48	133,000	160	130	150	175	200	225	250	275	325	375						125
42 x 48	176,000	150		165	190	220	250	275	300	350	400	450					150
48 x 60	264,000	120			220	250	280	310	340	400	450	500	550	180			

\*Horsepower varies with the size of the product, output and hardness of material.



TYPE  
**S**  
CRUSHER  
SPECIFICATIONS  
Bulletin 125

## TYPE S CRUSHER SPECIFICATIONS

Size Opening (Inches)	Approx. Shipping Weight (Lbs.)	Max. R.P.M. Driving Pulley	Approx. Capacity Per Hour When Discharge Opening Is Set To Sizes Shown Below—In Tons Of 2000 Lb.—Materials Weighing 100 Lbs. Per Cubic Foot When Crushed													Max. H.P. Required*			
			CLOSED SETTING—INCHES																
			2	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9	10	11				
36 x 42	124,200	175	120	140	160	180	200	225	250								115		
36 x 48	132,200	160	130	150	175	200	225	250	275	325	375						125		
42 x 48	197,200	150		165	190	220	250	275	300	350	400	450					150		
48 x 60	304,700	120			220	250	280	310	340	400	450	500	550				180		
56 x 72	470,500	95				280	315	350	380	450	515	580	640				250		
54 x 84	562,500	90								450	500	580	650	730	820	910	1000	300	
60 x 84	563,500	90									450	500	580	650	730	820	910	1000	300

\*Horsepower varies with the size of the product, output and hardness of material.

## TRAYLOR TYPE H JAW CRUSHER SPECIFICATIONS

Size Feed Opening (Inches)	Approx. Shipping Weight (Pounds)	APPROXIMATE CAPACITY PER HOUR WHEN DISCHARGE OPENING IS SET TO THE SIZES SHOWN BELOW—IN TONS OF 2000 LBS.— MATERIALS WEIGHING 100 LBS. PER CU. FT. WHEN CRUSHED																	Size Pulley (Inches)	Size Flywheel (Inches)	Max. H.P. Req.*	Size Feed Opening (Inches)	
		Max. R.P.M.	DISCHARGE OPENING—CLOSED—INCHES																				
			7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2	4	4 1/2	5	6	7	8	9			
8 x 12	8,000	300	4	5	6	7	8	9	10											46 x 8	46 x 4	10	8 x 12
10 x 16	13,000	300	10	11	12	14	16	18	20	23										48 x 8	48 x 4	15	10 x 16
10 x 20	16,000	300		12	15	17	20	22	25	28	34									48 x 10	48 x 4	20	10 x 20
15 x 24	24,000	275			21	23	27	31	34	38	42	50								60 x 10	60 x 5	30	15 x 24
15 x 30	30,000	275				29	33	38	43	48	53	62	72							60 x 12	60 x 5	40	15 x 30
18 x 36	47,000	250					46	53	61	69	77	93	108	125						72 x 14	72 x 6	60	18 x 36
24 x 36	65,000	250						68	77	86	95	114	132	150	169					72 x 14	72 x 6	75	24 x 36
30 x 36																							30 x 36
Special	86,000	250																		72 x 14	72 x 6	90	
30 x 36	73,000	250						68	77	86	95	114	132	150	169					72 x 14	72 x 6	85	30 x 36
30 x 42	88,000	200								112	125	150	175	200	225	275	300			78 x 18	78 x 10	100	30 x 42

## TRAYLOR TYPE HB JAW CRUSHER SPECIFICATIONS

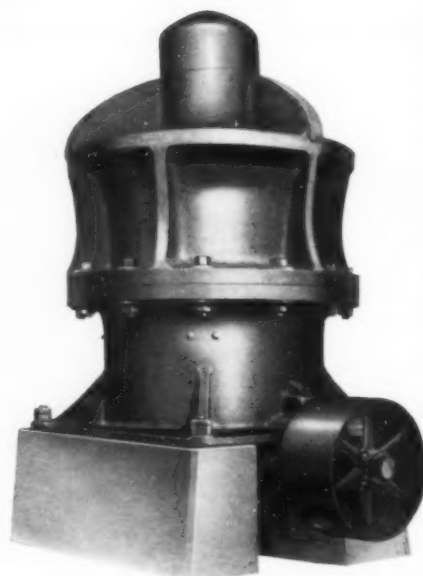
36 x 42	108,000	175							120	130	140	160	180	200	225	250			78 x 18	78 x 10	115	36 x 42
36 x 48	128,000	160							130	140	160	180	200	225	250	275	325	375	78 x 18	78 x 10	125	36 x 48
42 x 48	155,000	150									165	190	220	250	275	300	350	400	450	500	550	42 x 48
48 x 60	245,000	120										220	250	280	310	340	400	450	500	550	600	48 x 60
60 x 72	440,000	95											280	315	350	380	460	515	580	640	700	60 x 72

\*Horsepower varies with the size of the product, output and hardness of material.

# GYRATORY CRUSHERS

## TY

This is a compact machine, requiring little floor space and head room. Its simple design incorporates maximum strength, great efficiency and easy maintenance in features like these—an all cast steel frame, with upper shell and spider made in one piece; self-tightening bell head and curved concaves; an all around bottom discharge without diaphragm and a self-contained countershaft bearing fitted with roller bearings. Specifications and description will be found in Bulletin #7112.



TYPE TY CRUSHER SPECIFICATIONS

Number of Crushing Dia. of Head	Feed Opening (Inches)	APPROXIMATE CAPACITY PER HOUR IN TONS OF 2000 LBS. OF MATERIALS WEIGHING 100 LBS. PER CUBIC FOOT, WHEN CRUSHED.																								Maximum R.P.M. of Driving Pulley	
		DISCHARGE OPENING—CLOSED SIDE—INCHES																									
		1/4	3/8	1/2	5/8	3/4	7/8	1	1 1/4	1 1/2	1 3/4	2	2 1/4	2 1/2	3	3 1/2											
1'-3"	3	4	5	6	7	8																				1050	
1'-8"	4 1/2				10	12	14	16																			865
2'-4"	5 1/2																										865
3'-0"	7																										695
	7																										
	12																										
4'-0"	10																										575
	10																										
	16																										
5'-6"	13																										490
	22																										
	22																										

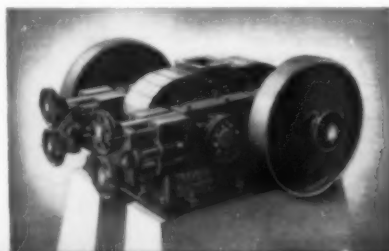
## TRAYLOR CRUSHING ROLLS

### TYPE A

Designed for light duty, these rolls have tension springs to provide pressures on the rolls up to 5,500 lbs. per lineal inch of roll face. The frames are of Mechanite® metal with spring seats, fixed shaft bearings and lower half of housing cast integral. Provision is made for thrust and lateral adjustment. Renewable smooth-face forged steel tires or one-piece rolls with corrugated faces can be had as special equipment.

### TYPE AA

Similar to Type A except that bearings are bored to receive renewable Mechanite® metal babbitted half bushings. Construction is much heavier throughout and pressures up to 25,000 lbs. per lineal inch of roll face are attained.



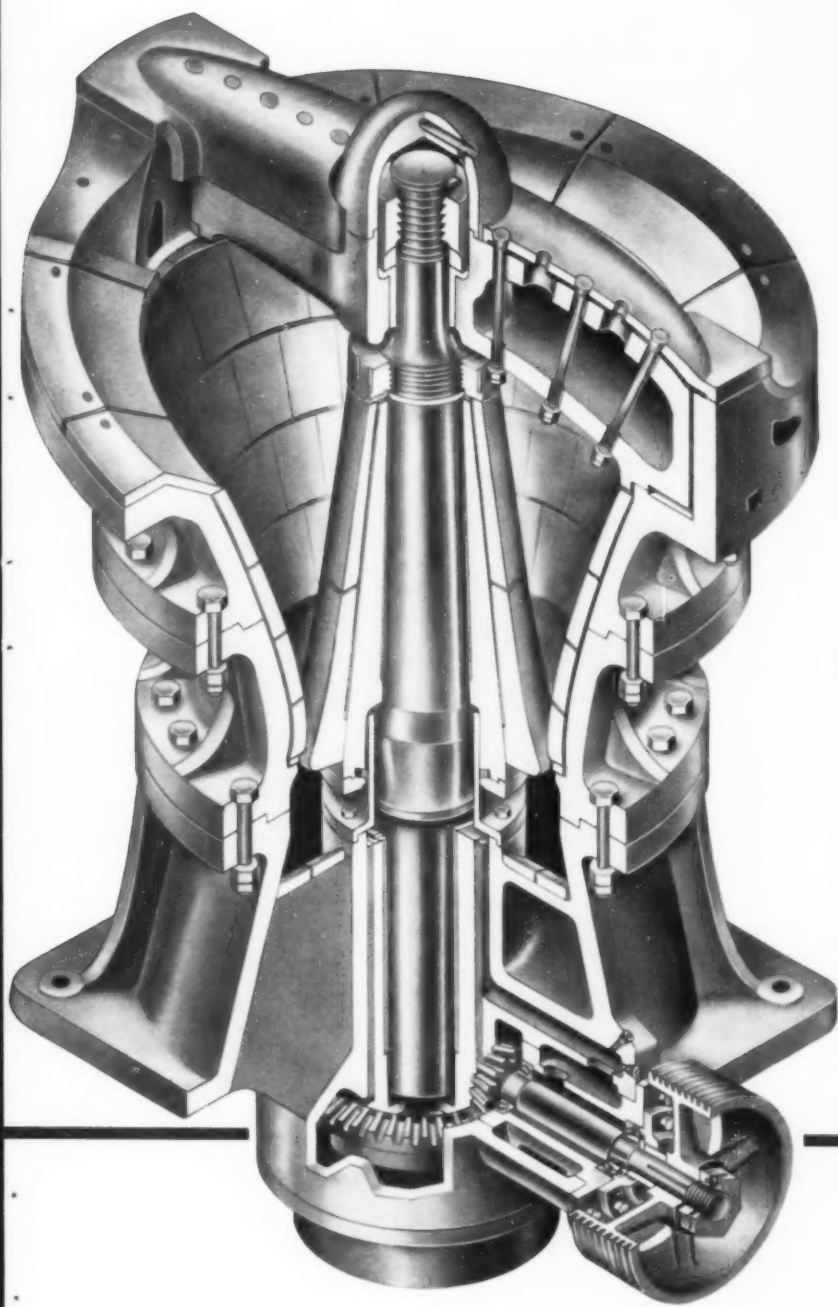
### 4 TENSION ROD TYPE

An extra heavy duty machine of unusually massive proportions. The lower half of the housing, tension spring seats and fixed shaft bearing pedestals are cast integral of Mechanite® metal. Lateral and thrust adjustment of the rolls is provided by a simple, sturdy device. Pressures up to 30,000 lbs. per lineal inch of roll face are attained.

Bulletin #5637 describes all of these Crushing Rolls.

\*T.M. Reg. U.S. Pat. Off.





**TC** The TC Bulldog is the most advanced primary gyratory crusher available. It embodies the improvements of design and manufacture found desirable by Traylor engineers during more than fifty years of experience. Great efficiency and capacity are assured by its sturdiness of design which provides mass for shock absorption; a non-weaving, straightline, bar type spider; an extra short main shaft of maximum diameter and strength; and a long, large diameter eccentric which reduces bearing pressure to the minimum. Detailed descriptions and diagrams are contained in Bulletin # 126.

The extra capacity and efficiency of Traylor Gyratory Crushers is due to the advanced design of the Traylor self-tightening bell heads and curved concaves. Choking is prevented by increasing the capacity of each succeeding feeding zone . . . power requirements are reduced even at finer settings by utilizing a greater portion of the power applied as a direct crushing force. This reduces slippage between material and crushing surfaces, greatly increasing the life of these parts.

TYPE TC CRUSHER SPECIFICATIONS

Size Opening Inches	Approx. Shipping Weight Pounds	Size of Each Receiving Opening	APPROX. CAP. PER HOUR IN TONS OF 2000 LBS. OF MATERIALS WEIGHING 100 LBS. PER CUBIC FOOT WHEN CRUSHED.										Maximum R.P.M.	Maximum Horsepower Required
			DISCHARGE OPENING—CLOSED SIDE—INCHES											
			1½	2	2½	3	3½	4	5	6	7	8	9	
20	104,000	20" x 80"	155	203	250	310	362	410					330	150
30	175,000	30" x 118"		309	386	465	540	618					320	225
36	255,000	36" x 136"			463	555	650	740	930	1100			360	250
42	385,000	42" x 153"				645	750	860	1008	1290			360	275
48	520,000	48" x 166"						990	1240	1480	1730	1980	325	350
54	600,000	54" x 190"							1400	1660	1960	2240	325	400
60	950,000	60" x 210"								1900	2220	2540	265	450



**OTHER**  
**Traylor**  
**MACHINERY FOR THE**  
**MINING INDUSTRY**

**ROTARY KILNS.** For over 40 years, Traylor Kilns have been widely used for calcining, roasting and chloridizing, volatilizing, sintering and nodulizing. The universal regard for Traylor Rotary Kilns has been earned by the high efficiency and rugged endurance built into them. The shells are made of thick steel plates welded together. Alignment is readily maintained by easily adjustable supports selected as the most suitable for the particular case. Each system of support includes adequate provision for thrust. Full floating type riding rings, attached to the shells without bolts or rivets, are turned true and smoothly faced. Steel main gears and pinions are generated to a special design in Traylor shops. Both sides of the main gear teeth are faced for extra wear. Another important feature is the individual consideration given to each installation. Every kiln is especially made to fit the job it must do. Sizes have been made to 12'-0" diameter, 450'-0" long. More details are contained in Bulletin #1115.

## TRAYLOR offers the Latest in

### SHELLS and TRUNNIONS

The shells are of all welded heavy steel plate construction.

The heads are made of cast steel and the trunnions are cast integrally with the detachable heads.

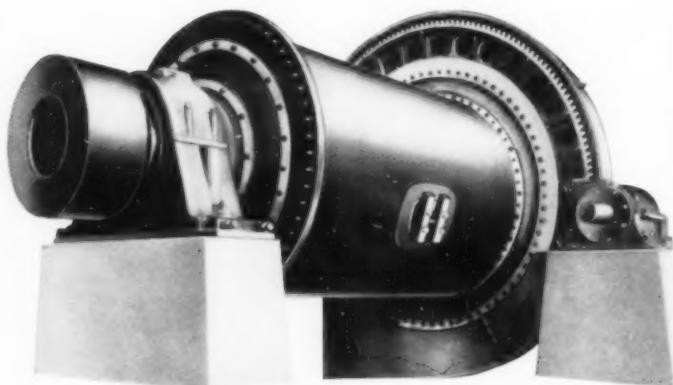
### LINERS

The shell liners can be furnished in various types, made of either chilled Meehanite® metal, Lorain high carbon rolled steel, manganese steel or high carbon cast steel. All liners are made in sections of reasonable weight. The

end or head liners are made of alloy steel to resist wear.

### DRIVING GEAR

Standard equipment is a steel cut spur gear and a steel pinion. These gears are precision cut on our Maag gear generator, with high addendum in the pinion and low addendum in the gears. The gear is made in halves, bolted together and faced and shouldered on both sides so that it may be reversed. The pinion is mounted on a symmetrical shaft so that it too may be reversed.



**BALL MILLS.** Traylor Ball Mills are made in two general types—overflow and diaphragm discharge. They are designed and built to be used for either wet or dry grinding. Shells are of steel plate, automatically welded for thorough penetration and even flow of welding rod. The table on the opposite page lists sizes for a great majority of applications. Should your process need a different size Traylor is equipped to make any type of grinding mill in any size you may require. With suitable feeders and auxiliary equipment they can be used in closed circuit operation.

**ROD MILLS.** The rod mill is a medium fine grinder of high efficiency. It is a single compartment mill in which the grinding charge is composed of round steel bars or rods of a length slightly less than the inside length of the mill. The rod mill is not an all-purpose grinder. It is only efficient for coarse or medium coarse work. It is not economical for fine grinding but within its field it has several marked advantages.

# Low-Cost, Dependable Grinding Mill Operation

## DRIVES

Traylor Grinding Mills may be driven by either of four types of drive. Flat or V-belt, direct-connected with the motor or through a speed reducer.

## MAIN BEARINGS

Made of Meehanite\* metal, each fitted with a high pressure Mennite pump. This pump coats the trunnion with a film of grease which lifts

and floats the mill to overcome high starting torques and eliminate undue wear caused by "dry" starting.

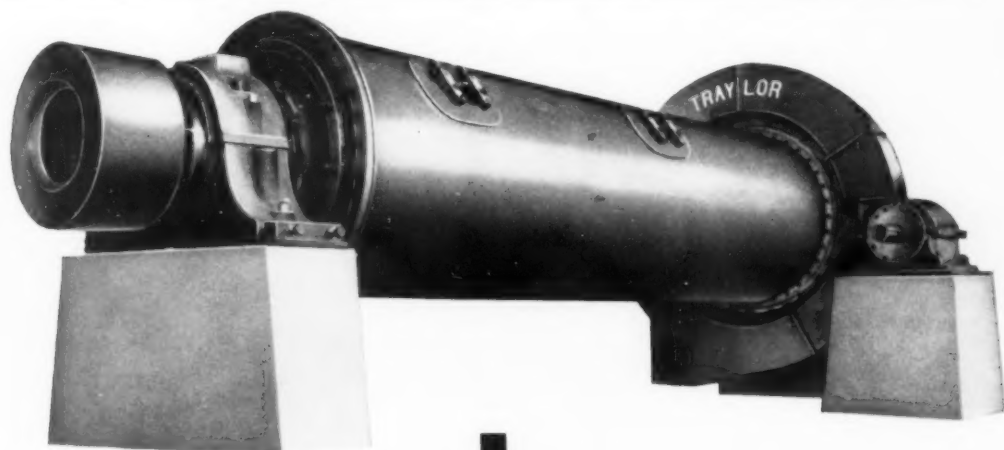
## MANHOLES

These are oval-shaped to permit any of the inside parts of the mill to be passed through. They are reinforced with a heavy steel band or frame welded to the outside of the shell. The manhole plate is held in position

by heavy steel crabs and heavy bolts.

## FEEDERS

Traylor Mills may be fitted with drum feeders, scoop feeders, a combination drum and scoop feeder, a screw feeder or a spout feeder, all of which discharge directly into the mill. They are made of heavy steel plate, all welded and are secured to the feed end trunnion.



## TRAYLOR BALL MILL DATA

Wet Grinding, Closed Circuit, Diaphragm Discharge—Feed, Minus 2"

Size of Mill in Feet	Dia.	Lgh.	R. P. M.	H. P. Motor Recomm. d.	Approximate Capacity Per 24 Hours in Tons of 2000 Pounds				
					Mesh Size				
					8	20	30	48	100
3	3	38	15	30	22	19	15	6	
3	4	38	20	40	32	26	20	8	
3 1/2	3	35	20	38	30	25	19	8	
3 1/2	4	35	25	51	39	33	24	11	
4	5	32	40	82	64	55	39	19	
4	6	32	50	58	76	66	46	23	
4 1/2	5	30	50	124	95	85	64	25	
4 1/2	6	30	60	148	114	110	78	30	
5	6	28	75	185	143	127	98	37	
5	8	28	100	260	192	170	140	50	
6	6	25	125	390	300	265	200	80	
6	8	25	150	510	400	355	270	108	
7	7	22	200	930	665	585	455	182	
7	8	22	200	1060	750	670	520	208	
8	7	20	250	1160	875	758	585	233	
8	8	20	250	1320	1000	965	760	266	

## TRAYLOR ROD MILL DATA

Wet Grinding, Closed Circuit—Feed Minus 1"

Size of Mill in Feet	Dia.	Lgh.	R. P. M.	H. P. Motor Recomm. d.	Approximate Capacity Per 24 Hours in Tons of 2000 Pounds				
					Mesh Size				
					8	14	30	48	65
3	6	29	20	77	65	50	39	29	
3	8	29	30	96	80	65	50	38	
3 1/2	7	27	30	159	130	95	75	55	
3 1/2	8	27	40	175	150	110	87	65	
4	8	25	50	250	215	160	125	91	
4	10	25	80	300	280	190	150	110	
5	10	21	100	540	470	350	275	200	
5	12	21	125	625	540	410	325	235	
6	12	17	150	800	700	525	400	300	
7	15	15	175	1280	1100	850	640	480	
8	16	13	350	2500	2000	1300	1000	750	

**COMPARTMENT MILLS.** This is a machine combining coarse and fine grinding in one unit. It increases grinding efficiency and makes plant design easier. Traylor Compartment Mills are made with two, three or four compartments, separated by partitions or diaphragms with suitably slotted grates, depending upon the size of feed and the product wanted.

The grinding media are usually metal balls of larger and smaller sizes in the several compartments, respectively, depending upon the kind of product desired. Liners in the several compartments are of metal.

**TUBE and PEBBLE MILLS.** The tube mill is a single compartment mill with a length to diameter ratio of about 3:1. Steel or iron balls are used as grinding media. The liners are of metal and designed for the special service in which the mill is to be used.

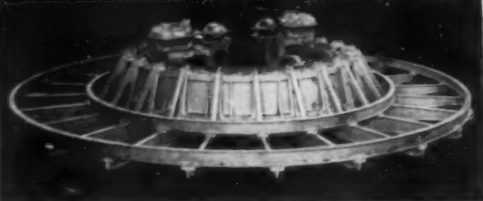
Pebble mills are also single compartment machines. They are designed for use with grinding media of pebbles, flint, hard rock or other non-metallic material. They are lined with Sillex, porcelain or stone to prevent iron adulteration of the product to be ground.

For more information about all types of Traylor Grinding Mills write for Bulletin #3103.

## STONE AND ORE SCRUBBERS

Traylor Scrubbers are revolving cylinders designed to hold the materials long enough to allow agitation in large quantities of water to separate, disintegrate and float off foreign matter. For materials easily cleaned the cylinders are made of perforated metal, either with or without jackets. For more difficult work the ball mill type is employed, with a solid shell and suitable liners designed with large baffles to produce maximum agitation.

Traylor Scrubbers are heavily proportioned to withstand the severe usage incident to handling large tonnages. They are supplied in any size desired. Write for additional details.



## CASTING MACHINES

Traylor builds two types of casting machines—Straight Line and Circular—of which the latter is more popular. The Traylor Circular Anode Casting Machine is very heavily proportioned, driven by two motors through separate gear trains but with a single control, and is designed to run in either direction. The track is conical, and the turn-table supporting the mold platform runs on flanged conical rollers. Sizes up to 40'-0" have been built. Write for additional details.

## TRAYLOR ENGINEERING & MANUFACTURING COMPANY • Allentown, Pa.

District Offices: NEW YORK CITY, NEW YORK 3416 Empire State Bldg. CHICAGO, ILLINOIS 2051 One LaSalle St. Bldg. SAN FRANCISCO, CAL. 55 New Montgomery St.

Canadian Manufacturer: CANADIAN VICKERS, LTD., MONTREAL, QUE., CANADA

## SMELTING FURNACES

Traylor Copper and Lead Blast Furnaces are supplied, in the circular type, in sizes from 30" to 48" dia. and in the rectangular type up to 56" x 360". Any capacity of rectangular furnace can be built, based on an extreme width at the tuyeres of 56" for copper and 48" for lead.

## CONVERTERS

For many years, Traylor has supplied the world's leading copper and nickel producers with converters of the Pierce-Smith type in sizes up to 13'-0" dia. x 35'-0" long.

Traylor-made Pierce-Smith Horizontal Converters have plates up to 1 1/4" thick, with heads of 1" plate heavily reinforced. Riding rings are of cast steel, with main driving gear bolted to one of them. Eight cast steel cradle rollers support the shell. Tuyeres are connected by suitable pipes to the wind box; blast connection is provided with swivel joint. Tilting is done by two sets of cast steel spur gears direct-connected to driving motor through worm gear reduction or through speed reducer. Shell may be revolved through 360°. Write for additional details.

## SMELTING ACCESSORIES

Every variety furnished including Bales, Blast Valves, Bullion Molds, Converter Slings, Copper Molds, Crucibles, Forehearths, Ingot Molds, Ladles, Ladle Tilting Mechanisms, Lead Coolers, Lead Kettles, Lead Molds, Matte Cars, Matte Molds, Matte Settlers and Slag Pots.





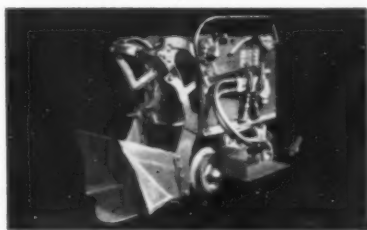
# THE EIMCO CORPORATION

EXECUTIVE OFFICES AND FACTORIES: SALT LAKE CITY 10, UTAH

EXPORT OFFICES: EIMCO BLDG., 52 SOUTH ST., NEW YORK CITY

BRANCH SALES AND SERVICE OFFICES: New York, N. Y., 51-52 South St. — Birmingham, Ala., 3140 Fayette Ave. — El Paso, Texas, Mills Bldg. — Chicago, Ill., 301 So. Hicks Rd., Palatine — Duluth, Minn., 216 E. Superior St. — Kellogg, Idaho, 307 Division St. — San Francisco, Calif., 637 Cedar St., Berkeley — London W.1, England, 190 Piccadilly — Houston, Texas, 4008 Purdue St. — Pasadena, Calif., 434 No. Lake Ave. — Baltimore, Md., P. O. Box 1052 — Pittsburgh, Pa., Investment Bldg. AFFILIATED EIMCO COMPANIES: Societe Eimco, 29 Rue De Mogador, Paris 9, France — Eimco (Great Britain) Ltd., Gateshead-on-Tyne 11, Co. Durham, England — Eimco Italia, S.P.A., Via Senato 11, Milan, Italy — Eimco (South Africa) Pty. Ltd., 136 Kindon Road, Robertsham, Johannesburg, South Africa.

## EIMCO ROCKERSHOVELS



### MODEL 12B

SPECIFICATIONS		
Overall Width	28"	711 mm
Overall Length (caging)	44"	1117 mm
Overall Length (bucket down)	73"	1854 mm*
Headroom Required	78 1/2"	1994 mm*
Clean-up Range	83"	2108 mm†
Weight	4500 #	2042 kilo

\*Standard †Without side plow

The smallest of the RockerShovels requires minimum space for caging. Available with track gauges from 15" to 36". Loading speed 20 to 35 cu. ft. per minute depending on material handled. All parts alloy cast steel. Heavy-duty antifriction bearings used throughout. Available in Air or Electric.



### MODEL 21

SPECIFICATIONS		
Overall Width	33 1/2"	851 mm
Overall Length (caging)	55"	1397 mm
Overall Length (bucket down)	87"	2210 mm*
Headroom Required	88"	2235 mm*
Cleanup Range	98"	2489 mm†
Weight	7200 #	3265 kilo

\*Standard †Without side plow

Medium sized RockerShovel. May be easily caged on most mine cages. Available in track gauges between 18" and 48". Loading speed 35 to 50 cu. ft. per minute depending on material to be loaded. Constructed of alloy cast steel parts with heavy-duty antifriction bearings throughout. Available in Air or Electric.



### MODEL 40H

SPECIFICATIONS		
Working Length (bucket down)	20' 8 1/2"	6312 mm
Headroom Required	8' 0"	2438 mm
Belt Width	28"	711 mm
Cleanup Range	12'†	3657 mm†
Weight Complete	16,850 #	7643 kilo

\*Without side plow

Largest rail type underground RockerShovel. Available in standard track gauges between 28" and Standard Railroad or larger. Loading speed 60 to 100 cu. ft. per minute. This model can be furnished to tram on 24" gauge tracks. Cast alloy steel parts are used throughout with heavy-duty antifriction bearings. Available in Air or Electric.



### MODEL 15

SPECIFICATIONS		
Overall Width	5'9"	1752 mm
Overall Length	10'2"	3099 mm
Weight with Hopper	8000 #	3629 kilo
Weight with Conveyor	9310 #	4223 kilo
Load Capacity (live load)	6000 #	2722 kilo
Turning Radius (hopper model)	7'4"	2235 mm

Rubber tired RockerShovel loading machine. It is actually a self-loading truck. Moves forward or reverse. Available with hopper, flat or inclined conveyor. Capacity 20 to 40 yards per hour depending on material loaded and length of haul. Available with AC or DC Electric motors or Gasoline engines.

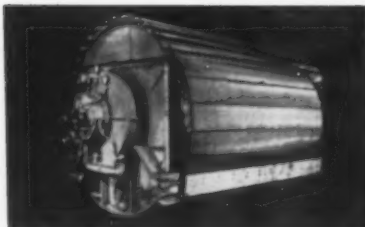
## EIMCO AIR LOCOMOTIVES



SPECIFICATIONS		
Receiver Size	32 x 84	40 x 84
Width Overall	32"	40"
Height Above Rail	48 1/2"	48 1/2"
Wheelbase	30"	30"
Working Pressure, p.s.i.	110	110
Approximate Weight	2790 #	3260 #

The only Air Locomotive with a two speed constant mesh transmission. This permits starting the load with maximum power and shifting to high speed for less air consumption per foot of travel. All receivers meet A.S.M.E. code for unfired pressure vessels and each receiver is inspected and serialized.

## EIMCO FILTERS

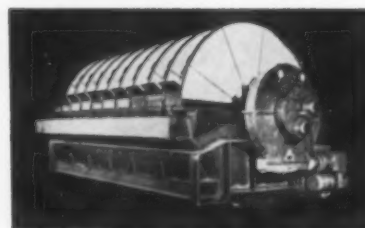


### DRUM FILTERS

SQ. FT. FILTER AREA						
Face/Lgth.	2'	4'	6'	12'	14'	18'
Diam.						
4	25	50	75			
6		75	113	226		
8			150	300	350	
10				376	440	
12				450	527	678

Also available in larger, smaller, intermediate sizes.

Drum Type Eimco Filters feature individual design, deep drainage sections, greater piping area and large streamlined valves. Materials of construction are specified for each filter and may be of stainless steel, monel, everdur, mild steel, clad materials, wood, and others with rubber, lead or other protective coverings.



### DISC FILTERS

SQ. FT. FILTER AREA						
Disc No.	1	2	3	6	10	12
Diam.						
4'0"	22	44	66	132		
6'0"	50	100	150	300	500	
8'0"			280	560	930	1115
12'6"				1200	2000	2400

Also available in larger, smaller, intermediate sizes.

Eimco Disc Type Continuous Vacuum Filters are available in several designs consistent with slurry characteristics. Disc sectors are made in wood, metal, plastic, rubber or combination designs. Materials of construction vary with product to be filtered and local conditions under which machine must operate.



### AGIDISC FILTERS

SQ. FT. OF FILTER AREA						
Disc No.	1	2	3	6	10	12
Diam.						
4'0"	22	44	66	132		
6'0"	50	100	150	300	500	
8'0"			280	560	930	1115
12'6"				1200	2000	2400

Available in smaller and intermediate sizes not listed.

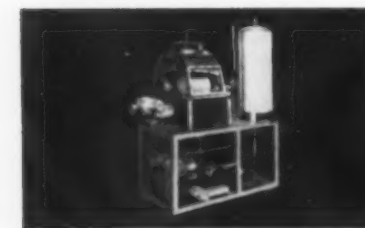
The agidisc has been successfully employed in the filtration of many heavy, fast settling metallurgical concentrates. It is especially adaptable when particles in suspension may be of a comparatively wide range, where the density of feed is low or settling rapid.



### PLATFORM FILTER STATIONS

For sizes available see tables of Drum & Disc type filters. Top feed dewaterers and dryers can also be furnished for this type unit which is particularly adaptable for small units. Units are available for wet or dry vacuum set ups and for single or double solution.

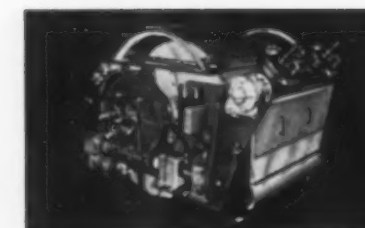
Platform or package filter stations are small drum, disc, pan, plate and frame or pressure units on a structural steel subbase with necessary equipment for small or pilot plant filter stations. Auxiliary equipment consists of: receivers, vacuum pumps, filtrate pumps, blower, motors, piping and a central control panel.



### LAB FILTERS

DRUM		DISC	
18" Dia. x 12" face	4 sq. ft. filter area	18" Dia. x 24" face	8 sq. ft. filter area
Stainless, monel, lead, iron, steel drum one piece cast. Individual panel covering feature.		Wood or metal disc sectors side caulking feature permitting use of small pieces of filter media.	
1 Disc 18" 2 sq. ft.			
2 Disc 18" 4 sq. ft.			

Eimco stations for Pilot Plant or Laboratory use are specially constructed complete filter plants. These units include all necessary operating equipment for a filter station, compactly assembled on a flat platform or in a cabinet. Materials to specifications. Single or double solution units.



### PRECOAT FILTERS

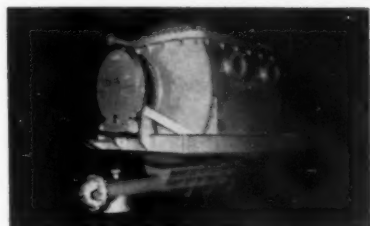
Face	2'	4'	6'	8'	10'	12'	14'	16'
Diameter								
4'	25	50	75					
6'		75	113	150	138	226		
8'			150	200	250	300	350	400

Eimco Precoat filters are available for open, vapor and pressure tight requirements. Eimco Precoat filters are the only filter that can be converted from open type to vapor or pressure tight construction in the field without changing the existing unit. Eimco's give higher filter rates, longer precoat and machine life, better product clarity, fully automatic operation.

## PRESSURE FILTERS

Standard Drum	Max. 8' dia.
Standard Disc	Max. 8' dia.
Standard Agidisc	Max. 8' dia.
Top-Feed Dryers	Max. 6' dia.
Precoats	Max. 8' dia.
Pressures up to 150 p.s.i. and all pressure vessel fabrication can be to A.S.M.E. Code.	

Eimco Continuous Pressure filters are available in either drum or disc design inside the pressure vessel. The vessel is designed for the desired pressure and the drum, disc or precoating unit is mounted inside the pressure tank. Discharge of the cake is by means of sealed screw conveyors or pressure tanks.

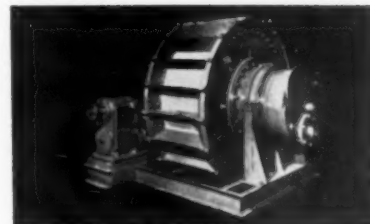


## DEWATERERS

Face Diameter	3'	4'	5'	6'
1'	9.5	12.5	15.7	18.8
2'	19.0	25	31.4	37.6
3'		37.5	47.1	56.4
4'			62.8	75.2
5'				94

Other sizes made to specifications.

Eimco top-feed dewaterers are designed to provide a high capacity unit for dewatering the slurry. Especially adapted for slurries with fast settling solids. Eimco's Dewaterers have a sturdy construction of heavy duty castings and steel weldments and can be mounted on a structural steel subbase for easy installation.

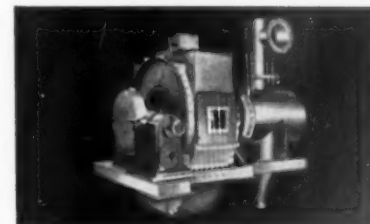


## DRYERS

Face Diameter	3'	4'	5'	6'
1'	9.5	12.5	15.7	18.8
2'	19.0	25	31.4	37.6
3'		37.5	47.1	56.4
4'			62.8	75.2
5'				94

Other sizes made to specifications.

Eimco top-feed drum-type continuous vacuum dryers are particularly suited for granular or crystalline materials which are fast settling in solution and difficult to filter on standard drum or disc type units. The machine incorporates a streamlined hooded assembly to direct heated air flow through cake and receiver.

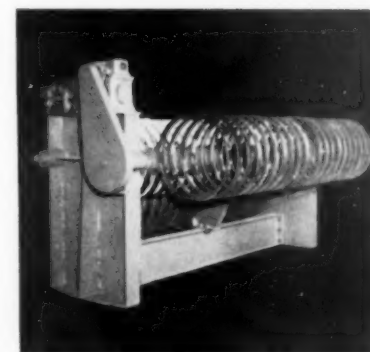


## EIMCO-BURWELL FILTERS

The Eimco-Burwell Filter represents a radical departure from the ordinary plate-and-frame type filter, from the standpoint of design, washing efficiency and labor requirements. Any product now being processed through a plate-and-frame filter will be more efficiently treated on an Eimco-Burwell Filter. The Eimco-Burwell Filter gives you all the advantages of a plate-and-frame filter plus unparalleled speed of operation, high washing efficiency and low labor requirements.

The Eimco-Burwell Filter is composed of two sets of circular frames, each pair being mounted at 180° of each other (on a common shaft) in the same vertical plane. In operation, the common axis of the two frames is horizontal with one frame between plates and the other is extended in cleaning position.

With the Eimco-Burwell Filter the following advantages can be expected on most materials: Faster opening and closing of the plates on the frames. Drier cakes. Highly efficient washing. "Double plus." Uniformly dense cakes over entire surface of filter media. Practically no time lost to change frames. Eliminate all down time for cleaning frames. Lower requirements in filter surface. Plus many more advantages.



Approximate break down time for a typical 35-minute operating cycle on 30 frame unit:

Feed	15 min.
Wash	10-12 min.
Blow	2-3 min.
Open	5-6 min.
Rotate	
Inspect	
Close	

Operating Position

CLEANING  
Done while empty frames out in open.

## CAKE HOLDING CAPACITY IN CU. FT.

SIZE OF FRAMES	7 FRAMES	10 FRAMES	14 FRAMES	20 FRAMES	30 FRAMES
1"	2.2	3.1	4.3	6.1	9.2
1 1/2"	3.2	4.6	6.4	9.2	13.8
2"	4.3	6.1	8.6	12.3	18.4
2 1/2"	5.4	7.7	10.7	15.3	23.0
3"	6.5	9.2	12.9	18.4	27.6
4" AREA OF FILTER	51.6	73.7	103.2	147.4	221.1

## EIMCO TRACTORS



**630 Tractor** — Small Eimco Crawler type RockerShovel ideal for trackless operations underground. Available with Air or Electric motors. Independent control of each track. Heavy-duty construction throughout. Loading capacity 600-800 tons per shift depending on rock and haulage equipment available. Headroom required 6'8", min. width 5'8", including step plates. Length, bucket down, 9'4". Also available as bulldozer for work in stopes or rooms.

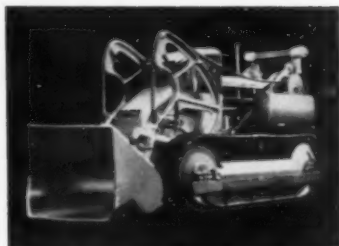


**105 Tractor** — Eimco crawler type prime mover with Diesel power. Available with bulldozer, loader (as shown, right) or with many other attachments. Drilling front, sides and rear will accommodate any accessory equipment with standard S.A.E. drilling. Eimco tractor has Unidrive transmission, an exclusive feature, which includes all necessary gearing and clutches for forward, reverse and turns. Clutches never need adjustment. All motions of tractor controlled with two small handles. Operator position up front for full visibility. Loader excavator attachment designed for rock work. Loading capacity 6-8 cubic yards per minute.

Tractor dimensions: Overall height 7'3", overall length (base) 12'6", track gauge 74".

Standard shoe 16", weight 26,000 bare, drawbar pull (calculated) max. with grousers at zero track slippage 40,000 lbs.

Excavator dimensions: Headroom required 13'6" (std.), overall length bucket down 16'6" (std.).

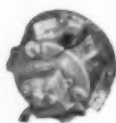


## OTHER EIMCO EQUIPMENT

### AIR HOSE



**Eimco Air Hose** — extremely flexible wire braid. Neoprene tube that will not collapse. Natural rubber cover treated for resistance to abrasion and impact. Will not sun check. Available in sizes of 1/2" to 4" with or without connections. Write for bulletin H4003.



### AIR MOTORS

**Eimco Air Motors** are five cylinder radial type motors for reversible or non-reversible service. Heavy-duty construction with special attention to streamlined air passages make the Eimco the most efficient air motor on the market. Write for bulletin L1026.

### LINERS



**Utaley Ball, Rod and Tube mill liners.** An alloy cast steel, representing the ultimate in controlled microstructure. For longer mill runs and reduced grinding costs. Actual job data shows that "Utaley" liners will grind more tons per set. Write for Utaley "SQ", bulletin C3003.



### GEARED AIR MOTORS

**Eimco Air Motors** are five cylinder radial type. Either flange or pedestal mounted or in a variety of gear reductions with a full range of speed reduction units. Precision made. Reversible. High starting torque. Dynamic and static balancing for highest efficiencies and smooth operation. Write for bulletin AE6001.

### BALL MILLS



**Eimco cylindrical type ball and rod mills** with either central overflow or grate discharge are available in a wide variety of sizes. Any Eimco mill can be converted from central overflow to grate discharge or vice-versa. Extra heavy-duty construction. Write for information and specifications.



### FOLDING SCRAPERS

**Eimco Folding Scrapers** are heavy-duty high capacity scrapers. Folding feature makes scraper require less power on return pull and dig in for full load on every trip. Cast of abrasion and impact resisting alloy steel. Write for bulletin C3004 for information and specifications.



## THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A.

Export Offices: Eimco Bldg., 52 South St., New York City

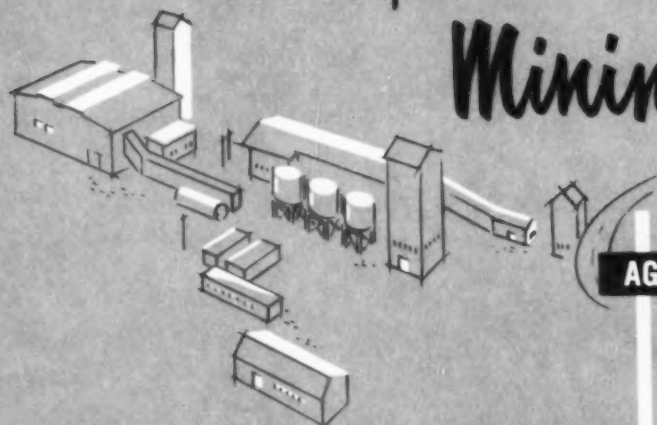
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*You Can't Beat An Eimco!*



# DORR-OLIVER

## equipment and methods for the Mining Industry



covering the unit operations of ...

**AGITATION**

**CLASSIFICATION**

**FILTRATION**

**THICKENING**

**ROASTING**

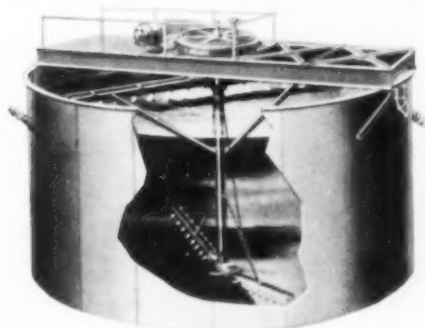
**SLURRY HANDLING**

*Worldwide Engineering, Equipment and Manufacturing Facilities*

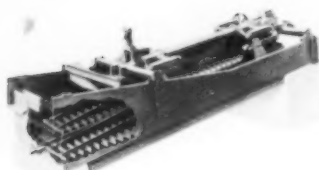
*are available through any of the Offices listed on the back cover ...*

### AGITATION

THE DORR AGITATOR . . . utilizes combination of air and mechanical agitation to maintain homogeneous mixture by means of air lift column. Ideal for continuous leaching, washing, and slurry correction and blending.



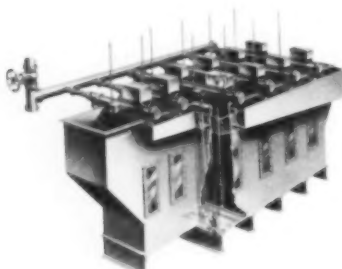
## CLASSIFICATION



The Dorr Type H Classifier

**THE DORR CLASSIFIER**... first machine to put classification on a continuous, mechanical basis and still the standard unit for wet separations in the 28 to 200 mesh range. Now available with Type H mechanisms in a complete range of sizes.

**THE DORR BOWL CLASSIFIER**... incorporates standard machine with shallow, circular bowl for separations in 65 to 325 mesh range.



The Dorrco Jet Sizer

**THE DORR HYDROSEPARATOR**... for large volume flow or exceptionally fine separations.

**THE DORRCO JET SIZER**... multiple-spigot, hindered-settling classifier featuring low operating cost and extreme flexibility of cell arrangement.

**DORRCLONE AND CENTRICLONE CLASSIFIERS**... a complete range of wet cyclones in diameters from 10 mm to 24 in.... both single and multiple unit installations.

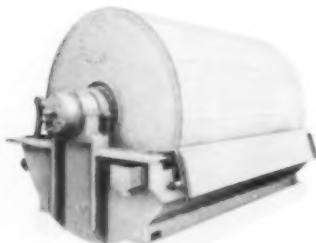
**DORRCO PAN-AMERICAN JIGS**... mechanically actuated, fixed screen Placer Jig for alluvial recoveries, grinding mill circuits and coarse ore concentration. Hydraulically actuated Pulsator Jig for roughing in open and closed circuit grinding systems and for roughing and cleaning in placer operations.



The DorrClone

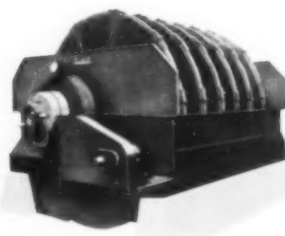
## FILTRATION

**THE OLIVER FILTER**... first machine to put vacuum filtration on a continuous basis and still the standard filter for washing cyanide slurries. Available in sizes ranging from 3 to 790 sq. ft. of filtering area and with a variety of discharge methods depending on cake characteristics.



The Oliver Filter

**THE AMERICAN FILTER**... ideal for de-watering slurries which form relatively thick cakes. Features big savings in floor space and can be compartmented to filter two or more products on the same machine.



The American Filter

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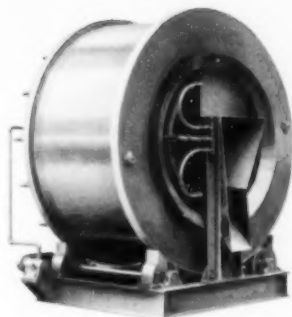
## FILTRATION

Continued

**THE DORRCO FILTER**... low maintenance unit where filtering takes place on the inside of the drum which also acts as the filter tank. Especially suited for de-watering fast-settling solids such as magnetites, lead sulfides, etc.

**THE OLIVER HORIZONTAL FILTER**... capable of counter-current washing in a single unit. Ideal for relatively slime-free slurries which form thick cakes.

**THE SWEETLAND FILTER**... a quick opening batch pressure filter with individual sight glass on each leaf. Good for leaching operations and where % solids in feed is insufficient to form a dischargeable cake on a continuous unit.



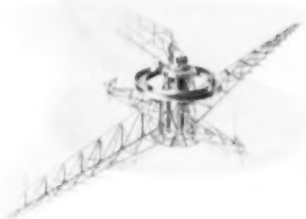
The Dorrcro Filter



## THICKENING

**DORR THICKENERS**... center shaft, center pier and traction units in a wide range of types and sizes to handle every thickening or clarification problem. Individual units available to handle from one to 25,000 tons of solids in feed per day. Can be arranged in trays for counter-current washing, parallel thickening or a combination of both in a single unit.

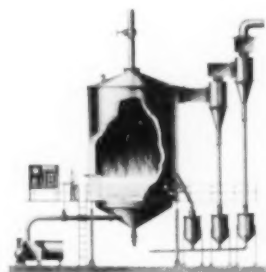
The Dorr 4-Arm Torq Thickener



## ROASTING AND CALCINATION

**DORRCO FLUOSOLIDS SYSTEMS**... the most significant advance in roasting techniques in the last 30 years. For roasting sulfides for metal recovery, for  $SO_2$  production for acid manufacture, for roasting gold ores prior to cyanidation, for heat treatment steps in the concentration of various ores.

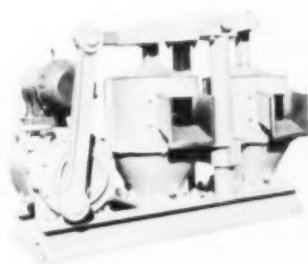
The Dorrcro FluoSolids System



## PUMPING

**THE OLIVER DIAPHRAGM SLURRY PUMP**... variable volume pump from zero on up. Discharge can be shut off while pump is running. Operates on compressed air with no mechanical linkage. Ideal for dense slurries.

**DORRCO V-TYPE AND W-TYPE PUMPS**... for positive, controlled removal of settled solids from Thickeners and Hydroseparators. Can be used as meters ahead of further treatment.



The Dorrcro W-Type Pump

## THE SCOPE OF THE DORR-OLIVER TECHNICAL SERVICE

The fundamental objective of Dorr-Oliver is the most economical solution to your processing problem. A worldwide engineering organization enables us to serve the mining industry wherever metallic and non-metallic minerals are mined or beneficiated. This complete service, all or any part of which may be brought to bear selectively on your problem, includes:



### *laboratory testing*

Complete laboratory work to investigate the fundamentals of the problem.

### *pilot plant demonstration*

Proving of the process on a scale approaching commercial application to accurately determine equipment sizes and operating factors.

### *flowsheet preparation*

Preparation of process flowsheets based upon testing, pilot plant demonstration or existing data.

### *economic analysis*

Preparation of estimates covering installed cost of complete plant and economics of operation to determine feasibility of project on a commercial scale.

### *plant design and specifications*

Design of the complete plant and preparation of complete specifications for all process equipment, utilities and structures.

### *purchase of equipment*

Purchase of all equipment by whatever arrangement best suited to the particular project and mutually desirable to client and Dorr-Oliver.

### *plant construction*

Responsibility for construction of entire plant or any portion thereof, including erection and installation of all equipment.

### *supervision of initial operation*

Supervision of initial plant operation on a commercial basis and instruction of client's operating personnel.

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Allis-Chalmers is the world's largest manufacturer of equipment for the mineral industries. The wide variety of A-C products has brought together one of the most diversified groups of engineering specialists in all industry. That means you can get expert equipment recommendations from A-C.

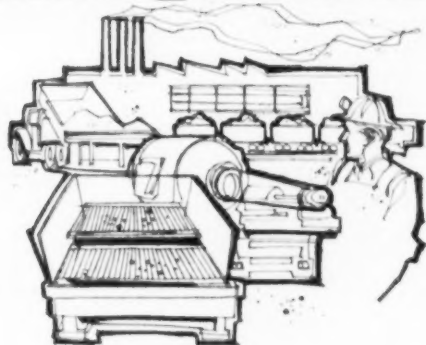
There's no guesswork when you specify Allis-Chalmers Engineering. The A-C staff, working with your staff, analyzes your problem or process and looks for ways to make existing equipment "team up" with the new equipment for greater production. And the recommendation will be unbiased, because A-C builds many types and sizes of equipment. The selection will be dictated by *exactly what you need*, not

an improvised arrangement.

Trained engineers in the Allis-Chalmers Research Laboratories help solve tough problems by testing samples of your product. This is another precaution that exactly the *right* equipment is selected for your particular plant.

And Allis-Chalmers not only builds the *basic* machinery, but *also* the motors, drives and control needed to run it — it is the only company that builds all this machinery in its own shops. This means a "packaged" unit or process, with every part *engineered* to work efficiently with every other . . . assures you of higher efficiencies, lower costs, undivided responsibilities. And Allis-Chalmers stands behind every unit 100%!

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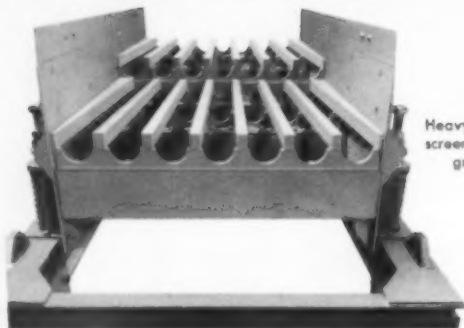
Distributors in all principal cities throughout the United States  
Offices and distributors located throughout the world.

# ALLIS-CHALMERS



# VIBRATING SCREENS FOR

## PRIMARY SCALPING SCREENS



Heavy duty scalping screen with straight grizzly bars.

for 3-ft maximum size pieces

Heavy duty screens are designed to scalp ahead of primary crushers, to handle feed direct from mine in lumps up to 3 ft diameter at capacities of 100 tph or more. These screens are furnished with a wide variety of decks to suit each application, such as the step deck with straight grizzly bars or perforated plate deck with skid bars for openings 4 to 10 inches.

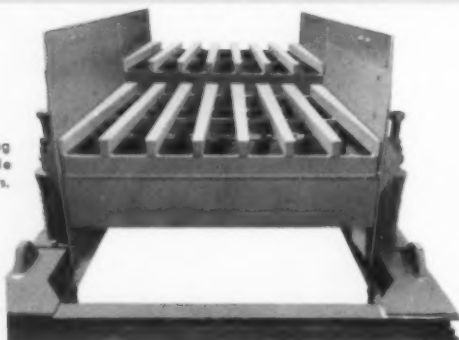
Steel plate deck with 4-in. square openings and rectangular skid bars.



Scalping screens with straight grizzly bars are available with the bars set to provide flared openings, which prevent wedging of large pieces between bars. Screening surface is easy to replace. Grizzly bar assembly is made in panels for bolting to the screen body. Screen openings are 4 to 10 in. A complete line of two-bearing screens are built by Allis-Chalmers for this service.

## SECONDARY SCALPING SCREENS

Heavy duty scalping screen with double tapered grizzly bars.

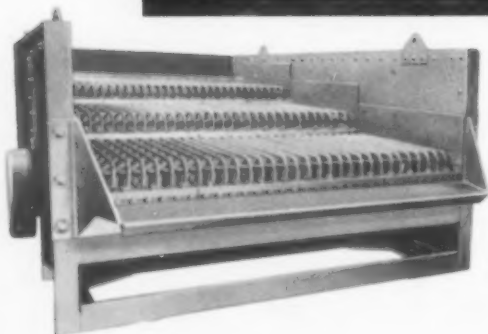


for 16-inch maximum size pieces

Two types of decks are available for handling sticky ores, approximately 16 in. maximum feed size. These are the step deck with double tapered grizzly bars and the free discharge rod deck. The grizzly bar deck has openings 4 to 10 inches; the rod deck has openings 1 to 3 inches, using  $\frac{3}{8}$  to 1-in. diameter rods.

Both decks have a step construction which results in free discharge of the material through the bars or rods and assists in turning the lumps over on the screen to prevent fines from riding on top of the material.

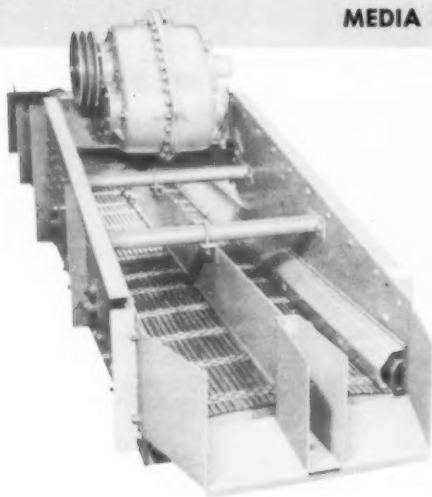
A complete line of Allis-Chalmers heavy duty screens is built with this type of construction.



Free discharge rod deck.

# EVERY APPLICATION IN MINING...

## MEDIA RECOVERY SCREENS



The success of the heavy media process is due in large measure to the successful operation of *Low-Head* vibrating screens used as primary screens ahead of the heavy media separator and as media recovery wash and drain screens following the separator.

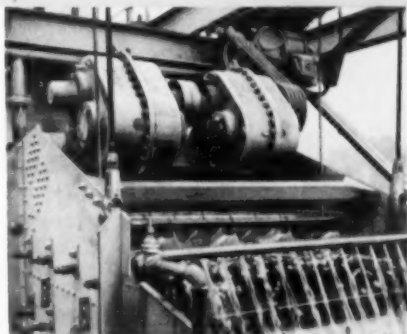
Allis-Chalmers pioneered in the development of screens for this important process. In heavy media plants, *Low-Head* screens are by far the most widely used screens. Allis-Chalmers builds *Low-Head* screens in sizes for every capacity needed in this process.

Screen with partition permits handling both sink and float products. Two partitions permit handling sink, float and middlings.

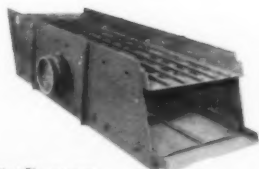
## WASHING SCREENS

Vibrating screens are used for washing materials having contaminants of moderate to low adhesive characteristics. They are also used for sizing, rinsing and dewatering material following blade mills and scrubbers. Screens are equipped with spray pipes and jets for wet screening.

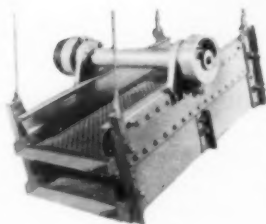
Several types of Allis-Chalmers screens are available for washing in single, double or triple deck models. For most thorough washing, rinsing or media recovery, the *Low-Head* screen can be furnished with repulping pockets. Material is repeatedly sprayed and screened. Step construction turns material over for more exposure to washing action. Requires less spray water than conventional screens.



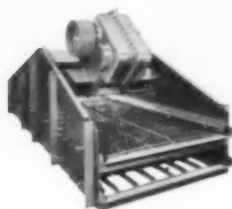
## SIZING SCREENS



Ripl-Flo screen.



Aero-Vibe screen.



Low-Head screen.

**Ripl-Flo Inclined Screen.** A two-bearing screen for moderate to heavy duty screening, coarse to fine, scalping, rinsing, wet or dry screening. Sixteen sizes, 3 x 6 to 6 x 16 ft. Circular vibratory motion. Suspended or floor mounted. Available with "Tri-Slope" deck for fine granular materials 1/4 x 0 to 35 mesh, or with *Sta-Kleen* or *Thermo-Deck* construction to eliminate blinding. Bulletin 07B6151.

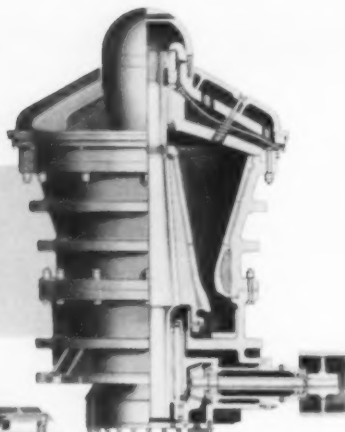
**Aero-Vibe Screen.** For sizing medium to fine materials. Feed size up to 3 inches; separations 1 1/2 inch square to 28 mesh. Screen sizes 1 1/2 x 3 to 5 x 10 ft, 1, 2 or 3 decks. Self-contained vibrating mechanism located above screen body. Open or enclosed models; suspended or floor mounted. Light in weight; easy to install; low in cost. Bulletin 07B6099.

**Low-Head Horizontal Screen.** For wet or dry screening, rinsing or dewatering of semi-fine to semi-coarse materials 2 1/2 inch to 10 mesh openings. Sizes 3 x 6 to 6 x 20 ft. Mechanism imparts a straight line vibratory motion to screen. Heavy duty *Low-Head* screen available with straight or stepped deck for fine wet screening. Bulletin 07B6330.

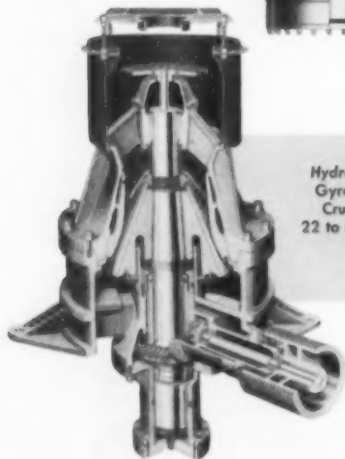
# CRUSHERS FOR EVERY MINING JOB

## GYRATORY CRUSHERS

Superior  
Gyratory  
Crusher  
55 to 109-inch



Hydrocone  
Gyratory  
Crusher  
22 to 84-inch



For high capacity primary or secondary crushing. Sizes 30-55 to 60-109 (60-inch feed opening, 109-inch diameter cone at crushing point). Capacities 170 to 3500 tph.

Cast steel construction makes the *Superior* gyratory crusher highly resistant to shock. Integrally cast reinforcing rings on top and bottom shell provide additional strength. Straight down discharge eliminates need for diaphragm. The crusher has been designed with a greatly improved automatic lubricating system and dust seal.

The curved crushing chamber, based on over a half century of experience in building gyratory crushers, provides a broad area of breaking contact and spreads wear over more crushing surface. The mainshaft can be raised with respect to the concaves to compensate for wear on mantle and concaves. Send for Bulletin 07B7870.

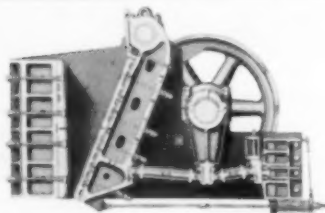
For secondary or tertiary crushing. Sizes 122 to 1784 (17-inch feed opening, 84-inch diameter cone at crushing point). Capacities 7 to 1050 tons per hour. Available with coarse, intermediate or fine crushing chambers.

Hydraulic operation makes possible rapid crusher setting adjustment without stopping the main driving motor. On the smaller machines product size adjustments are made with a hand crank, on larger crushers with electrically operated push-button control.

Hydraulic operation also lowers the crushing head to pass tramp iron or other uncrushable materials through the crushing chamber, then raises the head back to the original crusher setting, smoothly and without shock. Send for Bulletin 07B7145.

## JAW CRUSHERS

**A-1 Jaw Crusher**—Sizes 36 x 25 to 84 x 60 in. for primary breaking of tough, abrasive materials in blocky feed sizes. Long, deep crushing chamber results in large capacity, minimum slippage and uniform wear on jaw plates. Straight or non-choking jaw plates. Bulletin 07B6369.

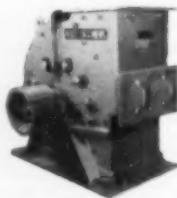


**Blake Jaw Crusher**—Five sizes, 10 x 7 to 30 x 18 in. A standard double toggle machine for medium and small plants. Send for Bulletin 07B7090.

**Fine Reduction Jaw Crusher**—For reducing 7-inch feed or smaller to as fine as 50% passing 1/4-inch. Sizes 18 x 9 and 24 x 10 in. Capacities 4 to 36 tph. Bulletin 07B6425.

## HAMMERMILLS

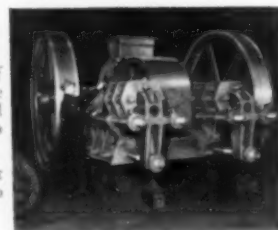
**Pulverator**—An impact crusher for primary breaking of soft material for reduction of non-abrasive rock by "multi-impact." Five sizes. Handles up to 6-inch feed. Capacities 2 1/2 to 125 tph. Revolving flat hammers hurl material against a succession of involute breaker plates, reduce it to fine, cubical particles without slivers. Send for Bulletin 07B6265.



## ROLL CRUSHERS

Crushing rolls handle a wide range of "sticky" or "packy" materials. Rolls are driven independently by large flywheel sheaves. Sizes from laboratory rolls to 78-inch diameter rolls. Bulletin

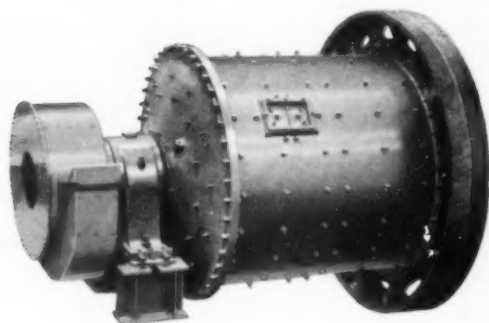
*Fairmount* single roll crushers are built by Allis-Chalmers. Sizes 24 x 48 to 36 x 60-in. rolls.



*Hydrocone, Superior, A-1, Pulverator, Fairmount, are Allis-Chalmers trademarks.*



# GRINDING MILLS ALL TYPES



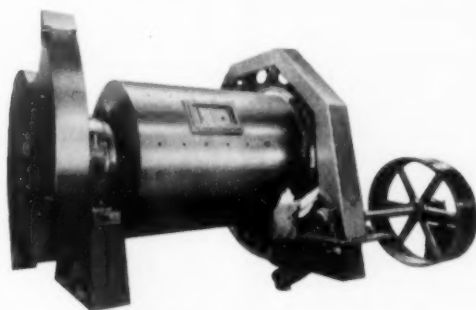
**BALL MILLS**

Sizes 3 to 12½ ft diameters, 3 to 16 ft lengths. For producing a finely ground product of 28 to 325 mesh from a feed size of about ½ inch. Ball mills are unsurpassed for the fine grinding of moderately to extremely abrasive materials.

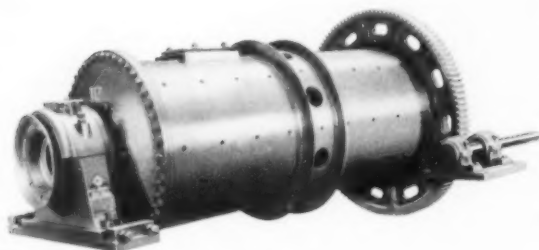
Overflow type ball mills are used for fine wet grinding in closed circuit with a classifier. Many processors have turned to this type to reduce liner and grinding media replacement cost. Diaphragm type ball mills are universally used for fine or coarse, wet or dry grinding in closed circuit with a classifier, screen or air separator. Bulletin 07B6718.

**OVERFLOW ROD MILL**

Sizes 3 to 10½ ft diameters, 6 to 13 ft lengths. Rod mill product can be varied from 6 to 35 mesh, with a minimum amount of fines. Because a rod mill can reduce a 1-inch slot size feed, it has supplanted the last stage of crushing in many plants. The screening action of the rods within the mill produces an ideal ball mill feed, free from tramp oversize, without the use of close circuiting screens. Bulletin 07B6718.



**PERIPHERAL DISCHARGE ROD MILL**



Sizes 3 to 10½ ft diameters, 6 to 13 ft lengths. The peripheral discharge rod mill was developed for those dry grinding circuits where close control was required for either the product top size or the fines. In addition to these dry grinding applications, either the end peripheral or the center peripheral discharge rod mill may be used in wet circuits where specific product requirements must be met. Bulletin 07B6718.

Allis-Chalmers also builds Pebble Mills, Preliminator Mills, multi-compartment Compeb and Ballpeb Mills, Balling Drums.

## PYRO-PROCESSING EQUIPMENT

- Rotary Kilns . . . for sintering, nodulizing, pelletizing, agglomerating, calcining.
- Air-Quenching Grate Coolers
- Converters
- Rotary Coolers, Dryers
- Holding Furnaces
- Feeders

Send for Bulletin 07B6368.A

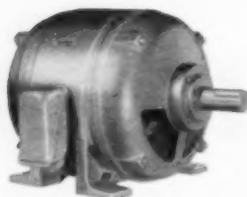
Compeb and Ballpeb are Allis-Chalmers trademarks.

## MOTORS

Allis-Chalmers builds a complete line of polyphase squirrel cage, wound-rotor, synchronous, and direct current motors with electrical and mechanical modifications to meet any application. Ask for Bulletin 51B6052, "Handy Guide for Quick Selection of Electric Motors"; it furnishes you with enough facts on Allis-Chalmers motors to enable you to select the one which meets your required electrical and mechanical specifications. The next time you need an electric motor, contact your nearby Allis-Chalmers representative.



**DRIP-PROOF** — New NEMA rerated squirrel cage motors are available in standard ratings starting at ½ hp. Their better protection against foreign matter helps keep maintenance costs low. Bulletin 51B6210.



**DRIP-PROOF** — Ratings from 15 hp at 450 rpm to 800 hp at 3600 rpm. Built with cast steel yoke heads, with integral mounting feet, and continuous welded drip covers. Either ball or sleeve bearings. Bulletin 51B7693.



**WOUND-ROTOR MOTORS** — For constant speed duty requiring frequent reversing or starting under heavy load. Adjustable-varying speed loads. High starting torque applications, such as compressors, crushers, kilns, blowers.



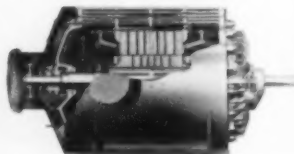
**TOTALLY ENCLOSED FAN-COOLED** — Ideal for dirty, dusty, oily, humid, corrosive, and outdoor locations. Rapidly moving air from the cooling fan keeps most dirt from settling on motor. Easily cleaned. 51B7225.



**EXPLOSION-PROOF** — For Class I, Group D and Class II, Groups E, F and G service, ½ to 100 hp. Modern ribbed construction of frame and end shields provides high efficiency cooling and is easy to keep clean. 51B7286.



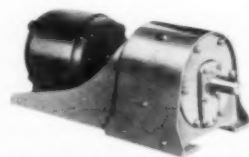
**ENCLOSED W-R MOTORS** — New line includes totally enclosed designs in non-ventilated, fan-cooled and explosion-proof types. Broadens application of wound-rotor motors to moist, dirty, corrosive, and hazardous locations. 51R8195.



**TEFC AND EXPLOSION-PROOF** — For adverse and hazardous indoor or outdoor operation A-C has developed tube-type motors, with air-to-air heat exchanger. Ratings from 100 to 3000 hp. 05B7150, 51B7149, 05R8189.



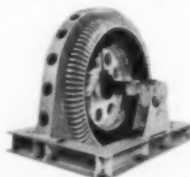
**LARGE CAGE MOTORS** — Built in sizes to meet all industrial, power plant, and special application requirements. Construction shown is available from 60 hp at 300 rpm to 2000 hp at 1800 rpm. 05B7542.



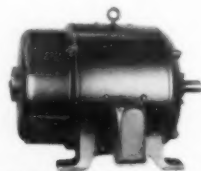
**GEARMOTORS** — For low speed drives. Output speeds 7.5 to 520 rpm with 1800 rpm motors. Integral or all-motor types, horizontal and vertical. Motors can have any standard electrical or mechanical modifications.



**SYNCHRONOUS** — Built in ratings from 40 hp up for a wide variety of speeds, including 3600 rpm motors in the larger sizes. Have high efficiency. Improve plant power factor for reduced power costs. 05R8183.



**SYNCHRONOUS** motors of high torque and constant speed are used for driving grinding mills, crushers, compressors, etc. They have high efficiency and improve plant power factor. Bulletin 05B7648.



**DIRECT CURRENT** — Shunt, series and compound wound types, for constant and variable torque loads requiring speed adjustment. Ratings ½ hp up, horizontal and vertical. Available in protected and enclosed types.

## CENTRIFUGAL PUMPS

FOR ALMOST ANY SERVICE

Whether your applications call for a single-stage or multi-stage pump, a pump to handle clear liquid, corrosive or abrasive liquids, or liquids containing high percentages of suspended solids, contact A-C for the one pump that will meet your particular requirements. Ask for "Handy Guide to Centrifugal Pumps," Bulletin 52B6059, for the story on the complete A-C line.



### CLOSE-COUPLED, SINGLE SUCTION

**ELECTRIFUGAL** — With adapter between pump and motor to permit choice of motor sizes and types. Pump and motor operate on single shaft. Capacities 10 to 2500 gpm, heads to 550 ft. Choice of four seals. 52B6083.



**FMP** — Horizontal or vertical mounted. Open and enclosed impeller. Built of same fine materials and high standards of workmanship as larger A-C units. Capacities to 80 gpm, heads to 140 ft. 52B7529.

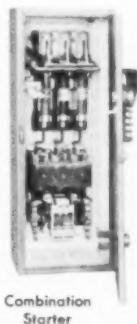
Description	Voltage Range	Hp Range	Enclosure
<b>SQUIRREL CAGE MOTOR STARTERS</b>			
<b>Full Voltage</b>			
NEMA Sizes: Manual 0-1 . . . . .	110-550	1½-7½	General purpose, dust-tight, water-tight explosion-proof and open types
Magnetic 0-7 . . . . .	110-550	1½-600	
Combination 0-7 . . . . .	110-550	2-600	
Reversing 0-5 . . . . .	110-550	1½-200	
Wall Mounted Type 371 . . . . .	2300-2500	to 350	General purpose
Floor Mounted Type HALC . . . . .	2300-5000	to 2250	Enclosed only
<b>Reduced Voltage</b>			
Type RMC (manual auto-trans) . . . . .	220-2500	5-150	General purpose
Type ARC (magnetic auto-trans) . . . . .	220-5000	5-1750	Enclosed
Type 5832 (reactor or resistor) . . . . .	220-550	5-600	Enclosed
Type HARC (automatic) . . . . .	2300-5000	to 2250	Enclosed
<b>SYNCHRONOUS MOTOR STARTERS</b>			
<b>Full Voltage Magnetic—Type ALS . . . . .</b>			
Type HALS . . . . .	220-5000	25-3000 to 2500	Enclosed or open Enclosed
<b>Reduced Voltage Magnetic—Type ARS . . . . .</b>			
Type HARS . . . . .	220-5000	25-3000 to 2500	Enclosed or open Enclosed only
<b>Reduced Voltage Semi-mag.—Type ALS . . . . .</b>			
Type HALS . . . . .	220-5000	200-3000 to 2500	Enclosed or open Enclosed
<b>WOUND ROTOR MOTOR CONTROL</b>			
<b>Magnetic Primary and Secondary Control—Type ALW . . . . .</b>			
Type HALW . . . . .	220-4500	5-1000 to 2250	Enclosed or open Enclosed
<b>Drums and Resistors for Secondary Control—Type 5852 . . . . .</b>			
	1000 max.	5-750	General purpose and semi-dust-tight

## CONTROLS

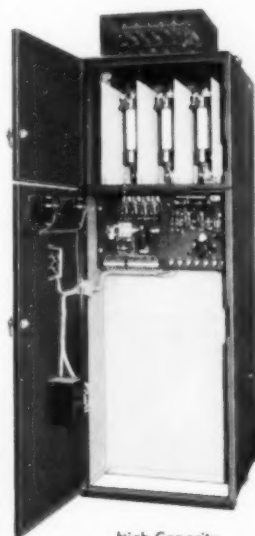
Allis-Chalmers makes a line of starters to meet practically all motor control needs. The scope of this broad line is indicated in the table below. Count on this wide range of starters, backed by industry-wide application engineering experience, for the answer to your control needs. Ask for Bulletin 14B7733.



Size 6 General Purpose Starter



Combination Starter



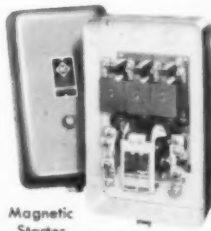
High Capacity Starter with fuses.



Manual Type Reduced Voltage Starter



Manual Starter



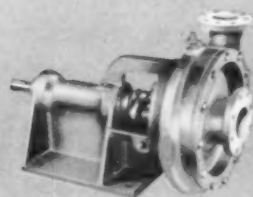
Magnetic Starter



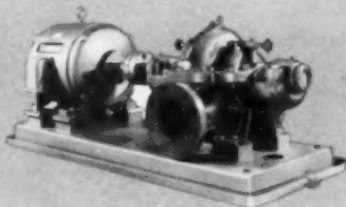
Oil-Immersed Starter



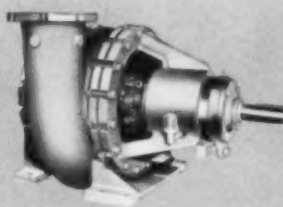
Push Buttons



**FRAME MOUNTED** — Pump mounted on frame with separate shaft. Hundreds of standard ratings available, varying from 1 x ¾ to 8 x 6 in. Capacities from 10 to 2000 gpm, heads to 500 ft. Grease or oil lubricated. Bulletins 52B6351 and 52B7638.



**DOUBLE SUCTION** — single-stage, for general water supply, circulating or drainage. Magic-Grip coupling for easy dismantling or assembly. 66 sizes from 2 x 1½ to 18 x 16 in. Capacities 30 to 7000 gpm, heads to 475 ft. Bulletin 08B6146.



**SOLIDS** — For applications wherever large percentages of suspended solids must be circulated. Few working parts, all readily accessible. Capacities to 10,000 gpm, heads to 270 ft. Bulletins 52B6381 (abrasive materials) 52B7112 (corrosive materials).



**RUBBER-LINED** — For handling sand, slime, slurries, tailings, and other abrasive liquids containing solids in suspension from ¼ inch down to —325 mesh. Open or enclosed impellers. 10 to 3000 gpm, heads to 140 feet. Bulletin 52B8156.

## World's Widest Range of V-Belt Drive Equipment

**TEXROPE**—greatest name in V-belt power transmission—is the registered trademark of Allis-Chalmers, originator and pioneer of multiple V-belt drives.

Ask for Bulletin 20B6051, "Handy Guide to Selection of *Texrope* Drive Equipment"; it tells the complete *Texrope* Drive story . . . V-belts . . . sheaves . . . and how to figure a *Texrope* drive.

### TEXROPE V-BELTS

Famous patented grommet construction provides longer life than ordinary V-belts. Made with straight sides for greater grip. Types for all operating conditions: heat-resisting; oil-resisting; static-resisting; and special High Capacity. Also available: *Texrope* wide range V-belts for use with wide range Vari-Pitch sheaves and Speed Changers.



Grommet Belt

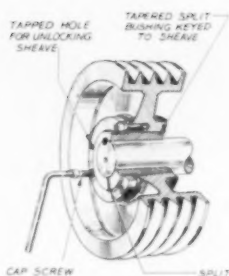


Wide Range Belt

### MAGIC-GRIP SHEAVES

The Magic-Grip cast iron sheave is designed for fast, easy mounting and demounting. Construction is simple, foolproof. Sheave can be installed or removed in shortest possible time. Cuts maintenance costs—reduces "down" time to minimum. It automatically adjusts itself to slightly oversize or undersize shafts. Positive clamp fit on shaft means no weaving—no vibration. There is no back lash—no extra play. Sheave can be mounted closer to motor or machine—reducing strain and stress. Result: bearing pressure eased—bearing life increased.

Entire sheave is smoothly finished, firmly fastened. No protruding bolts or set screws. Constant tension on cap screws means they won't work loose. Stock sizes for drives up to 150 hp. Larger sizes available on order.

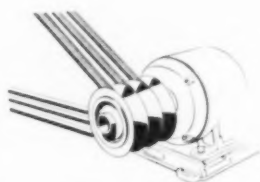


### VARI-PITCH SHEAVES AND SPEED CHANGERS

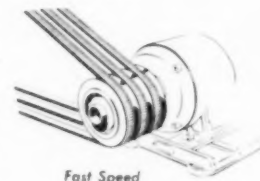
Every operator knows that running a machine at the right speed may mean the difference between profit and loss. *Texrope* variable speed drives can be quickly and easily adjusted to provide the exact speed required.

**VARI-PITCH SHEAVES** are available in two types: Standard Range for A, B, C, D or E belts—capacities from 1 to 300 hp—speed variations up to 38%. Wide Range for Q and R belts—capacities from 1 1/2 to 40 hp—speed variations up to 100%. Both types designed with stationary or motion control features—Stationary Control for infrequent changes when sheave is stopped; Motion Control for repeated speed changes while sheave is in motion. Bulletin 20B6082.

**Vari-Pitch Speed Changers** furnish 3 3/4 to 1 speed ratio in one compact, enclosed unit. Adjustable while in motion. Combines two wide range, worm gear-adjusted sheaves. Manual or pushbutton control. Bulletin 20B6013.



Slow Speed



Fast Speed

### POWER AND ELECTRICAL EQUIPMENT

#### TRANSFORMERS

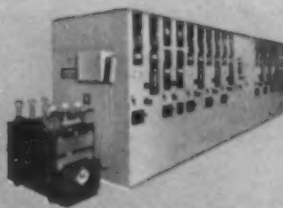
From the largest power transformers to instrument and metering transformers in a wide range of types and ratings. Distribution transformers with choice of protective arrangements. Dry type and *Chlorestal* filled non-inflammable liquid transformers for installation right at load centers.

#### SWITCHGEAR

High and low voltage metal-clad and metal enclosed switchgear in all standard ratings to suit your particular requirements. Breakers for HV switchgear can be either oil or magnetic air types. LV switchgear uses either manually or electrically operated air breakers. Weather-proof switchgear is available for outdoor installation. Switchboards built to suit, in standard or duplex types.

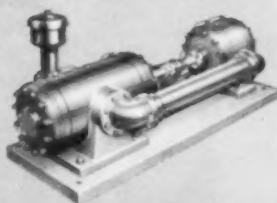
#### UNIT SUBSTATIONS

Completely factory built, unit substations can be installed indoors or out to provide power where you want it . . . to reduce cable costs and line losses . . . to provide better regulation. A-C substations can be built with any combination of HV and LV switchgear and oil, air or *Chlorestal* liquid cooled transformers to suit application. Bulletin 11B6285.

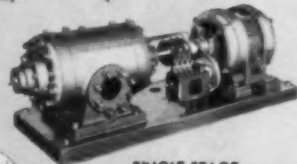


### AIR AND GAS HANDLING EQUIPMENT

#### TWO-STAGE COMPRESSOR WITHOUT DRIVE

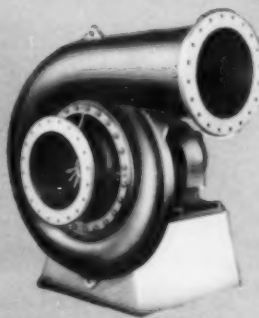


Sliding vane type, one or two stage. Air is compressed in cells formed by blades moving freely in and out of longitudinal slots in rotor eccentric to its casing. Quiet, smooth operation. Units start unloaded. Capacities to 6000 cfm, pressures to 125 psig.



#### SINGLE-STAGE COMPRESSOR WITH DRIVE

Centrifugal blowers are compact, light weight units with only one moving part. Four types available. Motor or turbine drive. Capacities to 130,000 cfm, pressures to 35 lb G. Bulletin 16B6048. Multi-stage blowers also available. Bulletin 16B6104.



*Electrifugal*, *Magic-Grip*, *Vari-Pitch* and *Chlorestal* are Allis-Chalmers trademarks.

**ALLIS-CHALMERS MFG. CO.**  
985 South 70th Street • Milwaukee 1, Wisconsin



# No long stops to switch drill steels with **TIMKEN®** interchangeable rock bits



*Dozens of different Timken  
multi-use and carbide insert bits  
fit the same drill steel!*

**Y**OU end costly drilling delays in switching steels when you change to Timken® multi-use and carbide insert bits.

Just unscrew one type of Timken bit and screw another on the same drill steel, right on the job. Makes it easier for the driller to change to the most economical bit as the ground changes. You also eliminate expensive drill steel inventories because dozens of different Timken multi-use and carbide insert bits *are interchangeable on the same steel.*

Both types of Timken bits are made from electric furnace Timken alloy steel, have a special shoulder union that keeps drilling impact from damaging threads.

Our expert rock bit engineers will be happy to help you solve your drilling problems. Just write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955



#### WHERE YOU CUT COSTS WITH TIMKEN MULTI-USE BITS

Most economical for ordinary ground. With correct and controlled reconditioning, they give lowest cost per foot of hole when full increments of steel can be drilled.



#### WHERE YOU CUT COSTS WITH TIMKEN CARBIDE INSERT BITS

Give highest speed through hard, abrasive ground. Also most economical for constant-gauge holes, small-diameter holes, very deep holes.

## TIMKEN

... your best bet for the best bit  
... for every job

# BAND-IT\* CLAMPS

STAINLESS STEEL AND HI-CARBON  
STEEL PRESSURE CLAMPS  
FOR ALL INDUSTRIES

## PIPE REPAIR CLAMP

(With Band-It Scru-Lokt Buckles)  
Repairs leaks—any diameter  
...few cents...few seconds



Stops leaks. Repairs, conserves, extends usefulness of rubber hose, steel pipe, tanks, etc. BAND-IT Clamps of all diameters formed from continuous roll of BAND-IT Band.

Manufactured by

**\*BAND-IT COMPANY**

INCORPORATED 1937

Telephone Cherry 4-5528

2550-90 Walnut St.

Denver 5, Colo., U.S.A.

Distributors in All Principal Cities of the United States and  
in 45 Foreign Countries

\*T.M. Registered U. S. Pat. Office



## PERFECT HOSE CLAMP

For all types pressure  
and suction hose

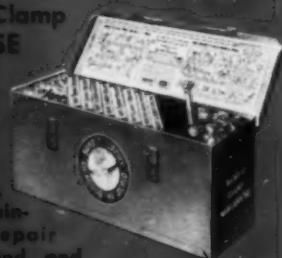


## The BAND-IT Trio

The Band-It Tool, Continuous Roll of Band-It Band, and Band-It Buckles Form All Diameters of BAND-IT Clamps from 1/4 inch to 30 feet.

## The Band-It Clamp WAREHOUSE

Holds over 900 industrial pressure clamps in one cubic foot of space. Perfect for maintenance or repair man. Tool, band, and buckles are all in one handy, complete clamp kit.



## For Close Quarters

### Band-It SCRU-LOKT BUCKLES

For those "hard-to-get-at" places. Hold full strength of the band. May be taken up or re-used elsewhere later.

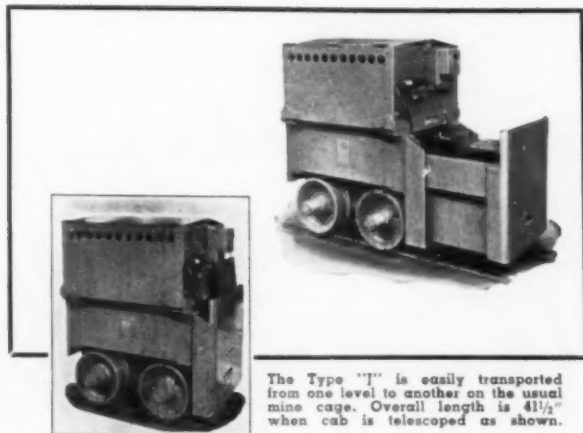


# The ATLAS CAR & MANUFACTURING CO.

*Designers and Builders of Mine Haulage Equipment*

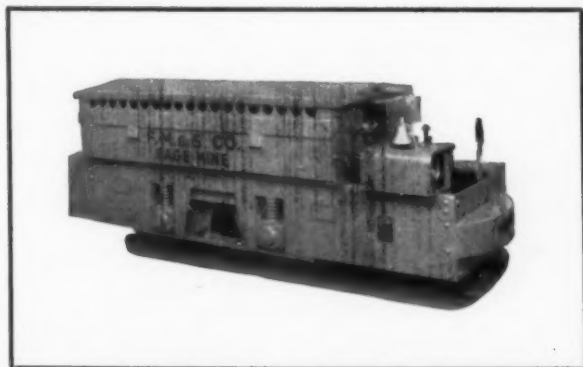
1100 IVANHOE RD. . . . . CLEVELAND 10, OHIO, U. S. A.

## METAL MINING LOCOMOTIVES



The Type "J" is easily transported from one level to another on the usual mine cage. Overall length is 41½" when cab is telescoped as shown.

**TYPE "J."** The Atlas Type "J" Storage Battery Locomotive is intended for tramping service. This 1½ ton locomotive meets all modern requirements for metal mining tramping service. It is equipped with a totally enclosed spur gear drive that has been proven the most efficient of any locomotive drive. It is mounted on ball bearings running in an oil bath. Frame is arc-welded and of rigid modern design. Battery box is completely removable as a single unit. Chilled iron wheels are standard equipment but rolled steel or steel tired wheels can be furnished. This tramping locomotive is of rugged design, using the highest quality materials, accurately assembled. These locomotives are in service today, showing outstanding service records at the lowest maintenance cost. For complete specifications, write for Bulletin No. 1270.



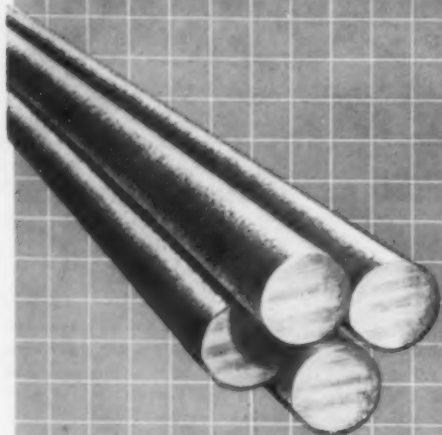
ATLAS 3 to 4 Ton Type "A" Locomotive.

**TYPE "A."** The Atlas Type "A" Storage Battery Locomotive is built for main line haulage in metal mines. It is furnished in 3 and 4 ton sizes, for 18 in. track gauge and in any desired size for wider gauges. In this locomotive will be found all of the features contributing to the most efficient performance, including: the Atlas totally-enclosed spur gear drive, arc-welded frame construction, series-parallel and split-field control for the two powerful motors, lever type quick-acting brake shoes and equipped with anti-friction bearings throughout. Like all Atlas Locomotives, it offers a rugged, substantial design manufactured of the highest quality materials accurately assembled. In addition to the above outstanding features, this locomotive is guaranteed to do more work on a battery charge than any locomotive of its size on the market. Complete details and specification on the Type "A" available on request.



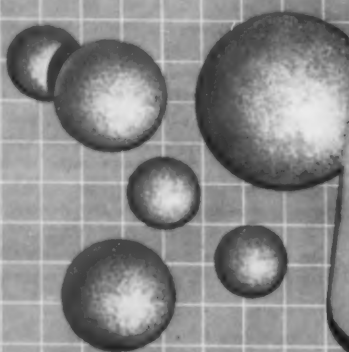
ATLAS 2½ Ton Type "K" Locomotive.

**TYPE "K."** This Atlas 2½ ton storage battery locomotive is specifically designed to solve intermediate mine haulage problems. It embodies all the engineering and field design experience acquired in 45 years of building metal mine haulage equipment. The Type "K" is equipped with an Atlas totally enclosed spur gear drive. The powerful brake shoes are mounted so as to be protected from wheel wash and water. Bearings are of the anti-friction type. Battery box is removable as a complete unit for charging or when used with a spare battery box, allowing the machine to be kept in continuous operation. Special attachments, equipment, or designs necessary to meet a particular mine operating condition, can be furnished on this, as well as all Atlas Mine Locomotives. Complete data regarding other details of the Type "K" will be sent at your request.



### CF&I GRINDING RODS

Rolled of special analysis steel, then carefully machine-straightened and cut to hold end taper to a minimum ... Increase rod life. Equally effective for fine crushing or coarse grinding.



### CF&I GRINDING BALLS

Forged of special analysis steel, CF&I Grinding Balls have built-in toughness to give optimum grinding ability and excellent wearability ... provide better power transmission and high impact-resistance.

*be sure!*  
specify proven  
and dependable

**CF&I MINING PRODUCTS**

When you specify CF&I Mining Products, you are sure of receiving products that are perfectly designed for mining operations—for the complete line of CF&I Mining Products has been fully field-proven over many years of service and in our own mines. In addition, rigid quality controls give you positive assurance that CF&I Mining Products will provide trouble-free service throughout their long life.

THE COLORADO FUEL AND IRON CORPORATION—Denver and Oakland  
WICKWIRE SPENCER STEEL DIVISION—New York, New York

**THE COLORADO FUEL AND IRON CORPORATION**

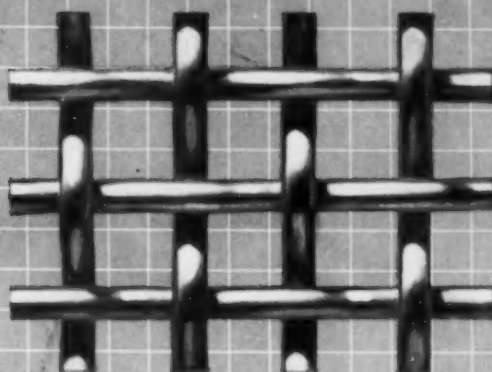






### WICKWIRE ROPE

Known for its dependability for over half a century, Wickwire Rope is carefully controlled throughout manufacture to assure the maximum degree of strength, toughness and fatigue resistance—extremely important features in mining operations where the safety of men and protection of expensive equipment depend upon wire rope.



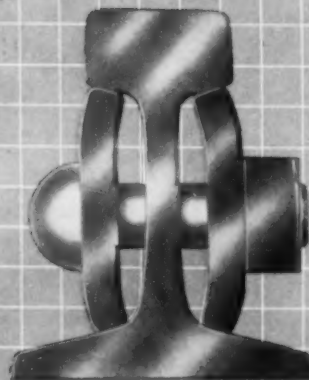
### CAL-WIC INDUSTRIAL SCREENS

Woven to the most exacting tolerances, Cal-Wic Industrial Screens give unusually long life because they are tightly crimped to prevent hidden wear at the wire intersections. Wires can't work loose under even the most severe vibrations. Wide range of screen types and alloys available.



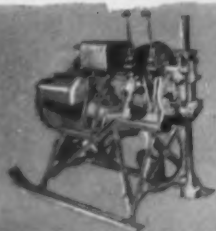
### CF&I ROCK BOLTS

Enable progressive mine operators to economize and, at the same time, provide greater safety and better housekeeping in their mines. Available in either slot and wedge or expansion shell with Pattin shell types.



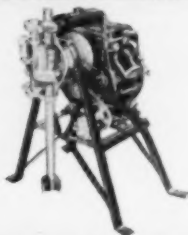
### CF&I MINE RAILS AND ACCESSORIES

Available in the range of 12 to 45 pounds, CF&I Mine Rails meet A. R. A. standards. Accessories include splice bars, angle bars, spikes and track bolts and nuts (both square and hexagon).



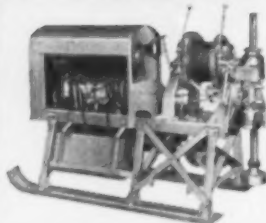
## BBS-1

World's best known surface drill. Handles "E" rods to 1000 ft. "A" to 800 ft.



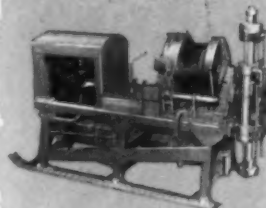
## X-RAY

Compact, portable - - 185 lbs. net. Takes 3/4" core to 200 ft. Low fuel consumption.



## BBS-2

Versatile, choice of 5 swivelheads. Depths to 2400 ft. Gas or diesel.



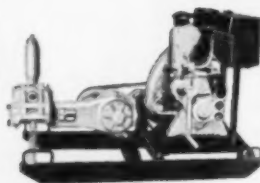
## BBS-4

Drills to 5000 ft. with "B" rods. Moves under own power. Gas or diesel.



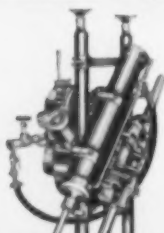
## PERMASET BITS

(Powdered metal). All standard sizes available from stock. Also reaming shells, etc.



## DRILL PUMPS

5-12 and 4-7 models. Capacities 400 to 1200 g.p.h. Diesel motor optional on 5-12.



## BBU-2

Rugged. Capacity, 1800 ft. with "E" rods, 1400 with "A". Four gear feeds.



## J.V.

4 feed swivelhead. Capacity 800 ft. with "E" rods. JVR with reverse and righthand feed screw for blast-holes.

*If its for*  
**DIAMOND DRILLING**  
*We make it!*



## V.E.G.

Vane motor powered version of J.V. Lightweight, compact construction. Can be speedily dismantled into two convenient units.

Shimizu Trading Co., S. A., Tokyo, Japan. • Boyles Bros. Drilling Co. Ltd. Newcastle on Tyne, Eng.  
• Claude Angwin (Pty) Ltd., Johannesburg, South Africa. • Wiers & Co., Ltd., Lisbon, Portugal.  
• I. H. Haza, 331 Santa Cruz, San Isidro, Lima, Peru. • Masbro & Co., A/S, Oslo, Norway.  
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• Larsen & Toubro (Pakistan) Ltd., Karachi, Pakistan. • Formac S. A., Rio de Janeiro, Brazil.

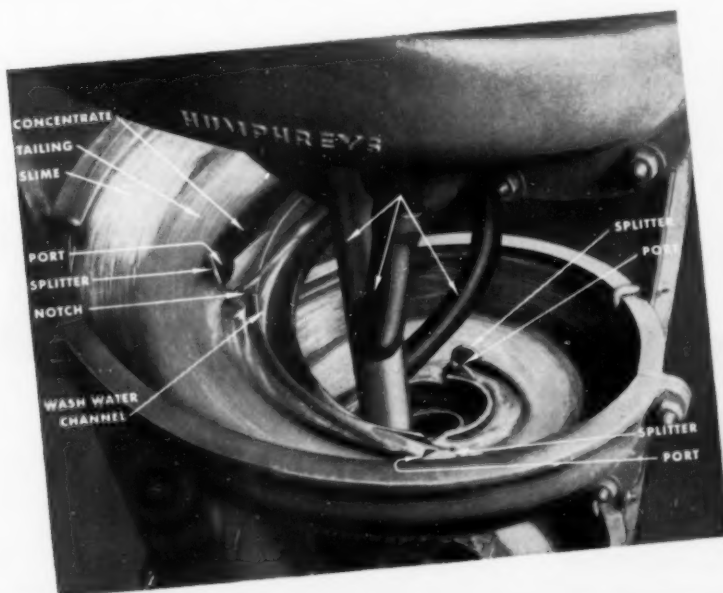
**BOYLES BROS**  
DRILLING COMPANY LTD.  
VANCOUVER, CANADA

**Is Your Mill Losing Values?**  
**Investigate...**

# **HUMPHREYS** *Spiral Concentrators*

## **Low-Cost Concentration**

Humphreys Spirals offer low cost operation, maintenance, installation. Small floor space. No moving parts.



**The Humphreys Investment Co.**

ENGINEERING DIVISION

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## CYANAMID REAGENTS FOR METALLURGICAL USE

### CYANIDATION-FLOTATION CHEMICALS

**AERO® Brand Cyanide** — Standard in all mining districts for the cyanidation of gold and silver ores. Used in flotation for the selective depression of sulfides of zinc, iron, copper, antimony and nickel; has also aided in the control of quartz and other silicates in non-metallic flotation operations.

**Sodium Cyanide** — Used in the cyanidation of gold and silver ores and as a selective depressant for various sulfides in flotation.

### FLOTATION REAGENTS

**AEROFLOAT® 15 and 25 Promoters** — These liquid AEROFLOAT Promoters have combined promoting and frothing properties. AEROFLOAT 25 is the stronger promoter and has less frothing power than AEROFLOAT 15. Both are selective, effective promoters for silver, copper, lead and zinc sulfides, and will not actively promote iron sulfides in alkaline circuit. Are also valuable as promoter-frothers for gold flotation.

**AEROFLOAT 31 and 33 Promoters** — These liquid AEROFLOAT Promoters are similar in physical characteristics to AEROFLOAT 25, but are stronger promoters due to the presence of added fortifying agents. AEROFLOAT 31 is recommended for flotation of oxidized gold ores, sulfide copper ores and silver sulfides. It is also used as an auxiliary frother in non-metallic flotation operations. AEROFLOAT 33 Promoter is slightly stronger than AEROFLOAT 31, and is most widely used in the flotation of galena. AEROFLOAT 33 also is an excellent promoter for metallic gold and copper, and copper sulfides.

**SODIUM AEROFLOAT® Promoter, AEROFLOAT 211 Promoter** — These dry AEROFLOAT Promoters are water-soluble, and widely used as sphalerite promoters. Also used in flotation of gold, silver and copper sulfide minerals in presence of pyrite which they do not actively promote. Non-frothing promoters, they are generally used with a standard frother such as: AEROFROTH® 65, 70, 77 or 80 Frother, or in conjunction with a liquid AEROFLOAT Promoter which also possesses frothing properties.

**AEROFLOAT 203, 213, and 226 Promoters** — These dry, water-soluble AEROFLOAT Promoters are strong collectors for gold, silver, zinc and copper ores, and are somewhat more powerful than SODIUM AEROFLOAT Promoter. AEROFLOAT 213 and 226 Promoters exhibit some tendency to froth. Like other members of the dry AEROFLOAT group, they do not float pyrite readily in alkaline circuits. Are especially good zinc promoters, but not generally used for galena flotation.

**AEROFLOAT 208 and 238 Promoters** — These dry, non-frothing promoters are generally used with standard frothers, and are excellent promoters for copper, silver and zinc sulfides, and free gold. AEROFLOAT 208 Promoter is one of the strongest collectors developed for metallics and is widely used in the flotation of fine, free gold, native silver, and copper. It is the preferred collector for the flotation of chalcocite, bornite, covellite and secondary copper minerals. AEROFLOAT 238 Promoter is widely used in the flotation of copper sulfides and complex oxidized ores, and is preferred for the flotation of chalcopyrite.

**AEROFLOAT 241 and 242 Promoters** — These liquid AEROFLOAT Promoters are neutralized, water-soluble forms of AEROFLOAT 25 and 31 Promoters, respectively. Due to their water-solubility, they are more readily reactive in flotation and are, therefore, especially suited where a fast-acting promoter is essential, and little or no conditioning is possible. AEROFLOAT 242 is a slightly stronger promoter than AEROFLOAT 241. AEROFLOAT 242 is very often used together with AERO\* Promoter 404 for the flotation of gold ores.

**AEROFLOAT 243 Promoter** — This dry AEROFLOAT Promoter resembles AEROFLOAT 203, but is slightly stronger in promoting action. It is particularly suitable for the flotation of gold, silver, copper and zinc ores.

**AEROFLOAT 249 Promoter** — This dry, water-soluble AEROFLOAT Promoter is used in the copper flotation plants of Northern Michigan. It is a stronger promoter than the other dry AEROFLOAT Promoters and also exhibits a tendency to produce more froth.

**AERO\* Xanthate 301** — Sodium secondary butyl xanthate is a powerful, water-soluble, non-frothing promoter for sulfide minerals, effective for use in bulk flotation of all types of sulfide ores and for oxidized base-metal ores after sulfidization. It is widely used for the flotation of pyritic gold ores in combination with AEROFLOAT 208 Promoter. It is often used with AEROFLOAT 15, as a very effective promoter-frother combination.

**AERO Xanthate 303** — Potassium ethyl xanthate is a general purpose non-selective sulfide promoter that has slightly less promoting power than the corresponding sodium salt, and substantially less than the higher-alcohol xanthates.

**AERO Xanthate 325** — A water-soluble, sodium ethyl xanthate reagent widely used as a sulfide promoter, alone or in conjunction with one of the liquid or dry AEROFLOAT Promoters. Its promoting strength, pound for pound, is somewhat greater than potassium ethyl xanthate, and somewhat less than that of AERO Xanthates 301, 343, 350 and 360.

**AERO Xanthate 343** — This sodium isopropyl xanthate is a strong promoter for all sulfide minerals. Promoting strength is between AERO Xanthate 325 and 301, and it is recommended for use where AERO Xanthate 325 provides insufficient promoting power.

**AERO Xanthate 350** — This is an amyl xanthate, one of the most powerful xanthates available. It is particularly useful for flotation of oxidized lead and copper ores after sulfidization, and in operations where a powerful, non-selective sulfide promoter is desired.

**AERO Xanthate 360** — This is a branch-chain amyl xanthate which exhibits slightly less promoting power than the straight-chain AERO Xanthate 350.

**AERO\* Promoter 404** — This dry solid is a powerful, water-soluble promoter that also exhibits some frother properties. It has found wide application in the flotation of oxidized lead and copper ores after sulfidization, and is often used as a secondary promoter together with xanthates and the AEROFLOAT Promoters, particularly in the flotation of copper and zinc sulfide ores. In some instances this reagent is effective in floating oxidized lead minerals without prior sulfidization.

## SEPARATION PROCESSES BY GRAVITY DIFFERENCES

Cyanamid offers the two most advanced and efficient mechanical processes for minerals beneficiation and coal cleaning. Both processes employ unique, exclusive principles to achieve accurate separation at low cost.

To beneficiate metallic and non-metallic ores down to 10 mesh: **HEAVY-MEDIA SEPARATION PROCESSES** in which the force of gravity alone is used to make a sharp separation of the heavy and

light constituents of the feed in a recoverable medium having a controlled specific gravity between that of the heavy and light fractions.

For treating ores  $\frac{3}{8}$ " x 65 mesh: **DUTCH STATE MINES CYCLONE SEPARATOR PROCESSES** in which centrifugal-centripetal forces make a sharp separation between the heavy and light constituents in an exogenous or autogenous medium of predetermined specific gravity.



**AERO Promoter 444** — This dry, water-soluble promoter is useful in the flotation of slow-floating lead, and copper and zinc sulfides, and for the flotation of oxidized lead and copper ores after sulfidization.

**AERO\* Thiocarbonyl 130** — An improved, readily-dispersible form of thiocarbonyl (diphenyl thiourea) that is useful in the flotation of base-metal sulfide ores, particularly those containing galena, as a supplementary promoter in conjunction with the AEROFLOAT Promoters and xanthates.

**AEROFROTH® 63 Frother** — This higher-alcohol type frother has found wide acceptance in the coal industry as a replacement for pine oil. It has a frothing-promoting action on such easy-to-float minerals as coal, graphite, sulfur, molybdenite and talc. Produces a more brittle, less persistent froth than pine oil or cresylic acid, with resultant improvement in selectivity on many ores.

**AEROFROTH 65 Frother** — This is a new synthetic, water-soluble frother which produces a closely-knit, selective froth. Mill results indicate greatly reduced frother consumptions with this material, of the order of 1/3 to 1/10 of previous consumption of certain other frothers. It produces a less brittle froth than the other AEROFROTH Frothers.

**AEROFROTH 70 Frother** — A branch-chain higher alcohol producing a more selective and less persistent froth than pine oil or cresylic acid. It is widely used in both metallic and non-metallic flotation operations.

**AEROFROTH 77 Frother** — This straight-chain higher alcohol frothers, this straight-chain, non-promoting frother produces a light-textured froth with high selectivity.

**AEROFROTH 80 Frother** — Latest addition to our alcohol frothers, this straight-chain, non-promoting frother produces a light-textured froth with high selectivity.

**Cresylic Acid and Pine Oil** — These tried and true frothers, standards after many years of usage in flotation operations, are available through Cyanamid.

**AERO\* Depressant 610** — This dry, water-soluble solid is a powerful depressant for talc, sericite and other gangue slimes, and also functions as a dispersing agent. Use at a number of zinc flotation plants has resulted in markedly lower insoluble and higher zinc contents of zinc flotation concentrates.

**AERO Depressant 615** — A water-soluble dry powder that is useful as a depressant for talc, sericite and certain foliated ferromagnesian silicate minerals. Often used in conjunction with AERO Depressant 620.

**AERO Depressant 620** — This water-soluble powder finds wide use as a depressant for talcose-schist gangue.

**AERO Depressant 633** — Often used together with AERO Depressant 610, as well as alone, for talc depression, this water-soluble powder is also quite effective for depression of carbonaceous gangue.

**AERO Depressant 645** — This material also finds wide use as a depressant for carbonaceous gangue. It is a water-soluble, dry powder.

**AERO\* Modifiers 158 and 162** — These water-soluble dry solids are effective in controlling deleterious gangue slimes in both metallic and non-metallic flotation operations. Their use often reduces reagent consumption and improves concentrate grade and recovery.

**AERO\* Promoter 708** — This crude tall oil fatty acid is widely used for the flotation of non-metallic ores. Provides efficient fatty acid promotion at low cost.

**AERO Promoter 710** — This is the sodium soap of AERO Promoter 708. A water-soluble, easy-to-feed acid promoter for many non-metallic minerals.

**AERO Promoter 712** — A water-soluble, saponified fatty acid promoter-frother, very useful in non-metallic and certain sulfide flotation operations.

**AERO Promoters 721, 723, and 730** — These refined tall oil fatty acids contain both oleic and linoleic acids and are useful in non-metallic flotation where a crude fatty acid is not suitable. Average rosin acid content of these three reagents is 1%, 3½% and 30%, respectively.

**AEROMINE® 2026 Promoter** — This cationic promoter, product of Cyanamid research, was first used at Cyanamid's Florida phosphate operations as a silica promoter. Water-soluble, it also exhibits frothing properties.

**AERO\* Promoter 801** — Originally developed for the treatment of iron-oxide ores, this water-soluble petroleum sulfonate promoter finds wide use for the flotation of iron-bearing impurities from glass sands and ceramic raw materials such as feldspar.

**AERO Promoters 824 and 825** — These oil-soluble petroleum sulfonate promoters are generally used in conjunction with AERO Promoter 801 for treatment of glass sands; also used for flotation of such non-metallics as rhodochrosite, kyanite, chromite and barite. They are dispersible in water with vigorous agitation.

**AERO Promoter 827** — This reagent is similar to AERO Promoters 824 and 825, but is slightly more readily dispersible in water.

**Yellow Prussiate of Soda (Sodium Ferrocyanide)** — This water-soluble dry solid is finding wide use as a copper depressant in the separation of copper and molybdenum sulfides by froth flotation. (See U. S. Patent 2,664,199).

#### FLOCCULATING AGENTS

**AEROFLOC® 548 and 552 Reagents** — These two general purpose flocculants are in use at a variety of metallurgical operations for increasing thickening and filtration rates, and recovering solids formerly lost in thickener overflows. Useful in C.C.D. cyanidation plants. Most generally used in slurries with neutral or alkaline pH.

**AEROFLOC 3000 Reagent** — A recently-introduced AEROFLOC Reagent which is useful as both a thickening and filtration aid on a wide variety of solid suspensions. It is useful in highly-acid as well as in alkaline pH.

#### OTHER METALLURGICAL CHEMICALS

Also available to the mining industry through Cyanamid are such chemicals as soda ash, copper sulfate, sodium silicate, alkali polyphosphates, zinc sulfate, oleic acid and others. We invite your inquiry for specific chemicals.

\* AERO is a trade-mark of American Cyanamid Company applied to flotation reagents such as xanthates, promoters, modifiers, depressants, etc.

### Have you received these Mineral Dressing Publications?

Cyanamid has available the following issues of its "Mineral Dressing Notes" series. We will be glad to send you a copy of issues which you may not have received:

- No. 17 "Chemistry of Cyanidation".
- No. 18 "Heavy-Media Separation Processes for Coal Preparation".
- No. 19 "Heavy-Media Separation Processes for Mineral Concentration".
- No. 20 "Cyanamid Reagents".
- No. 21 "Froth Flotation".

In addition to the aforementioned publications, you may be interested in brochures on the beneficiation of these metallic ores and minerals which are also available:

Antimony	Chromite	Cobalt
Fluorspar	Manganese	Molybdenum
Sulfur	Tin	Tungsten

# AMERICAN Cyanamid COMPANY

MINERAL DRESSING DEPARTMENT



Cable Address — Limenitro, New York

30 ROCKEFELLER PLAZA, NEW YORK 20, NEW YORK

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Down went the  
overhanging rocks  
...and the cost of  
getting them down!

## REMINGTON INDUSTRIAL GUN Cuts \$85<sup>00</sup> job to \$9<sup>50</sup> at quarry

"It used to cost us about \$85 each time we had to remove overhanging rocks from our quarry—now with a Remington Industrial Gun we do the whole job for \$9.50." That's the report from a zinc mine in Alabama.

Savings like this are common. The Remington Industrial Gun saves hours of hazardous work . . . can be aimed, loaded and fired in seconds. Mount it on a truck, a tripod or a mobile chassis. Set it up in any part of your mine or quarry. You'll find real versatility in this fast, safe way of removing obstructions. The U.S. Bureau of Mines, for example, has used it for dialodging large icicles at distances up to 200 yards!

**BEST WAY TO REMOVE KILN RINGS, TOO.** A few well-placed shots with the Remington Industrial Gun loosen rings, cause them to fall when kiln is rotated. Minimum downtime! Big gains in production!

**REMINGTON INDUSTRIAL SHELLS** have tremendous smashing power. They're loaded with a powerful 3-ounce lead projectile that develops 7,475 foot-pounds' muzzle energy.

### ---SEND COUPON FOR FREE FOLDER---

Industrial Sales Division M.W.-4  
Remington Arms Company, Inc.  
939 Barnum Ave., Bridgeport 2, Conn.

Please send me your free folder describing  
the Remington Industrial Gun.

Name \_\_\_\_\_ Position \_\_\_\_\_  
Firm \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_

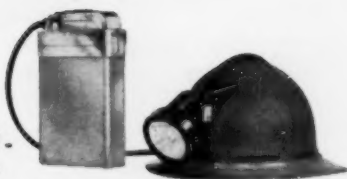
"If it's Remington—It's Right!"  
**Remington** 

# MSA

SAFETY EQUIPMENT HEADQUARTERS

... a complete product line  
 that brings greater safety,  
 increased production  
 to mining operations

## EDISON R-4 ELECTRIC CAP LAMP - M.S.A. TYPE K HAT

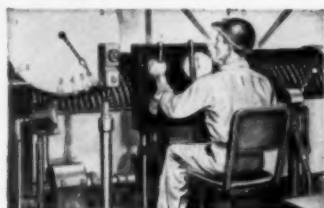


Today's modern mining methods call for more and better illumination. You'll find a dependable and profitable answer in the Edison R-4 Lamp. Its brilliant, unfailing beam permits miners to operate modern equipment at its greatest capacity, safely.

The famous Type K Skullgard is strong, light, durable, comfortable. Unaffected by oil, water, perspiration. Provides maximum head protection. Write for details.

## M.S.A. HOISTPHONE

Dependable voice communication between hoisting engineer and moving cage, or at any level. Ideal for load leveling, shaft repairs, inspections. Also available—the M.S.A. MinePhone for instantaneous communication of orders to moving locomotives for improved haulage.



## M.S.A. SELF-RESCUER

For immediate breathing protection in emergencies. Vital to the miner while traveling through carbon monoxide to fresh air. Available in cache assemblies for storage throughout the mine, or in individual carrying cases. U. S. Bureau of Mines Approved.



## M.S.A. CHEMOX®

Provides complete breathing protection in any atmosphere for a minimum of 45 minutes. Chemox generates its own oxygen from replaceable chemical canister. Weighs only 13½ lbs. Comfortable in service. U. S. Bureau of Mines Approved.



## M.S.A. McCAA TWO-HOUR OXYGEN BREATHING APPARATUS

Assures complete breathing protection in unbreathable atmospheres for a minimum of two hours. U. S. Bureau of Mines Approved.



## M.S.A. DUSTFOE #55 RESPIRATOR

Light weight, compact, comfortable. A dust respirator that provides maximum protection. U. S. Bureau of Mines Approved.



## M.S.A. "ALL-SERVICE" MASK

Dependable breathing protection against smoke and toxic gases including carbon monoxide singly or in combination, where there is no oxygen deficiency. Unit is U. S. Bureau of Mines Approved.



## M.S.A. PNEOLATOR

Automatic artificial respiration device that assures maximum chances of recovery to those overcome by poisonous gases, electrical shock or other causes of asphyxia. Pneolator is accepted by the American Medical Association.



## M.S.A. MIDGET IMPINGER

A portable instrument for quick and dependable dust sampling. Entirely self-contained and hand operated. Ideal for dust control and survey work.

## OTHER M.S.A. PRODUCTS FOR THE MINING INDUSTRY

Belts—Goggles—Safety Clothing—Carbon Monoxide Tester—Methane Detectors and Recorders—Stretcher Outfits—First Aid Kits and Materials. Send for our Mining Catalog for complete details on all products.



When you have a safety problem, M.S.A. is at your service. Our job is to help you.

## MINE SAFETY APPLIANCES COMPANY

201 North Braddock Avenue, Pittsburgh 8, Pa.  
 At Your Service: 77 Branch Offices in the  
 United States and Mexico

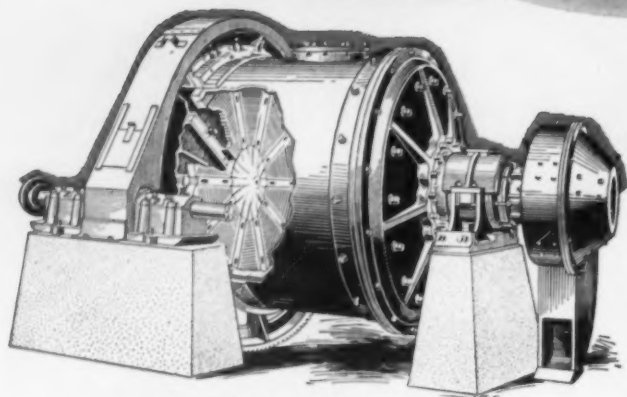
## MINE SAFETY APPLIANCES CO. OF CANADA, LTD.

Toronto, Montreal, Calgary, Edmonton, Winnipeg,  
 Vancouver, New Glasgow, N.S.



# DIRECTORY

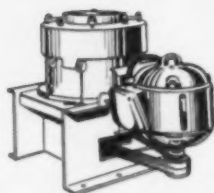
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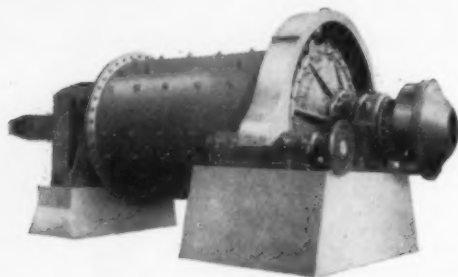
*Marcy Grate Discharge Ball Mill*

## Massco Gy-roll Reduction Laboratory Crusher

Reduces  $\frac{1}{2}$ " feed to as fine as 10 mesh in single pass. High capacity with low power consumption. 6" and 10" sizes.



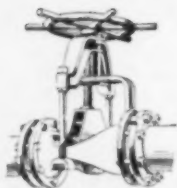
For Wet or Dry Grinding of ore, cement, clay or fibrous materials. Types, sizes and capacities for from 5 tons up to 3000 tons per 24 hours. Marcy Grate Discharge Ball Mills and Open End Rod Mills have unique features resulting in quick discharge, maximum useful grinding, minimum overgrinding and better metallurgy. Used throughout the world.



*Marcy Open End Rod Mill*

## Massco-Grigsby Rubber Pinch Valves

Designed for abrasive and corrosive pulps. Patented hinged sleeve for longer wear. 1" to 12" diameter. Up to 150 pounds continuous pressure.



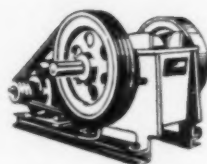
## Massco-Adams Reagent Feeders

For wet reagents and other liquids. No mechanically driven moving parts. Only one micrometer screw adjustment. Siphon principle. Requires no electrical connections.



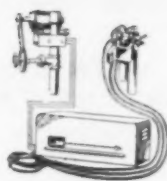
## Massco Laboratory Jaw Crusher

Welded steel frame; manganese steel jaw and check plates; bronze bushed bearings; smooth jaws give better product and easier cleaning. Adjust for plate wear by convenient hand wheel adjustment.



## Massco-Adams Density Controller

Automatically regulates water dilution of pulp in grinding circuit to maintain constant percent solids—thus, controls size of finished product.

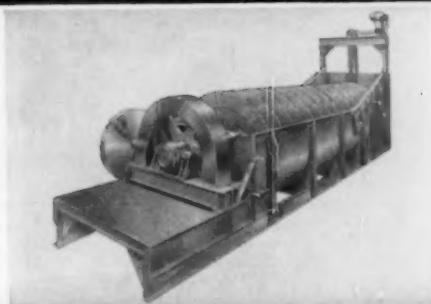




# cost-cutting equipment

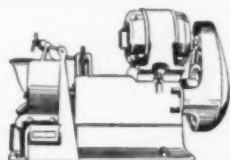
## Akins Classifiers and HMS Separators

Akins Classifiers are made in sizes from 12" to 84" dia., simplex and duplex. They are used for classification of solids by size, dewatering, washing coal, preparation of china clay and glass sand, desliming and de-oiling phosphate rock, sink-float concentration. Used throughout the world by hundreds of the best companies in the mining and process industries.



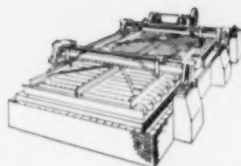
## Massco-McCool Pulverizers

Disc type grinder with planetary movement. No gears. Will grind to 150 mesh in one pass.



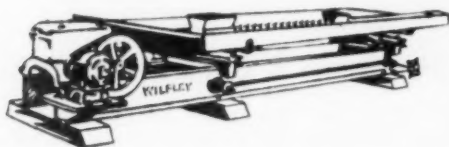
## Lowden Dryer

For drying flotation concentrates, graphite, clays, ground minerals, paint fillers, pigments, various precipitates. Can use most any fuel including live steam and waste heat.



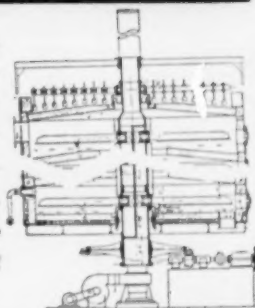
## Wilfley Tables

For separation of any ore or material amenable to gravity concentration. Laboratory and commercial sizes—up to 180 tons capacity per 24 hours.



## Skinner Roasters

For roasting and calcining ores, clays, limestone, limestone mud; decomposing oil sludge in process of producing sulphuric acid; incinerating sewage and garbage. Coal, oil or gas fired. Sizes to 22' inside diameter; up to 12 hearths.



## MINE & SMELTER

### Licensed Manufacturers and Sales Representatives:

Canadian Vickers, Ltd., Montreal, Canada  
The Austral Otis Eng. Co., Ltd., So. Melbourne, Austr.  
Morgardshammars Mek. Verkstads Aktiebolag,  
Mogardshammars, Sweden  
Pegson Limited (for England & Africa) Coalville,  
Leicestershire, England

### Sales Agents:

W. R. Judson, Santiago, Chile  
The Edward J. Nell Co., Manila, P. I.  
The Ore & Chemical Corporation, 80 Broad Street,  
New York City 4, New York  
Representatives for Continental Europe

**The Mine & Smelter Supply Co.**

Denver 17, Colorado

## FOREIGN REPRESENTATIVES

## COLORADO IRON WORKS

### Licensed Manufacturers and Sales Representatives:

Canadian Locomotive Co., Ltd., Kingston, Ont., Canada  
John Carruthers & Co. (Pty.), Ltd., Sydney, Australia  
Head, Wrightson & Co., Ltd., Stockton-on-Tees, England  
Head, Wrightson & Co., S. A. (Pty.), Ltd., Johannesburg

### Sales Agents:

Andrews and George Co., Inc., 5 Shiba Park, Tokyo, Japan  
Continental Sales and Equipment Co., Hibbing, Minnesota  
Edw. J. Nell Co., Manila, P. I.

AND ITS SUBSIDIARY COMPANY

**COLORADO IRON WORKS CO.**

Denver 2, Colorado

OFFICES IN SALT LAKE CITY, EL PASO, 1775 BROADWAY, N. Y. C.

CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

[World Mining Section—249]

# LOOK TO

for Outstanding Advances

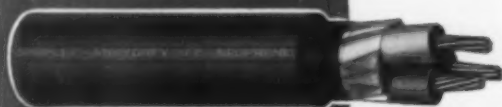
*Plus A Complete Line of Performance-*

## Simplex-Tirex Twin Shuttle Car Cables



Feature *Gear-Shaped* insulated conductors that firmly interlock with the jacket so that even continual twisting of the cable will seldom pull them out of position. They will not twist or override each other. The Selenium-Neoprene Armor is CURED-IN-LEAD for extra toughness. Marked P-101 BM. Available as Type W and Type G.

## Simplex-Anhydrex XX Cables



High-voltage cables that assure uninterrupted service at 2,000-25,000 volts and over in underground, duct or aerial installations. Insulated with Anhydrex XX, first high-voltage insulation combining all the properties necessary for trouble-free operation when exposed to water and moisture, heat, ozone and other deteriorating agents. Jacketed with a special neoprene compound that provides steadfast protection against rough handling, soil acids and alkalies, oils, grease, chemicals and flame.

## Simplex-Anhydrex Signal & Communication Cables



Light-weight, easily installed cables for telephone, signal and communication circuits. Protected by a special neoprene jacket. No metallic tapes necessary. Insulation has ideal electrical and physical characteristics for these uses.

► Available as two-conductor or multi-conductor cables for telephone and communication service. These cables can also be used for block signaling as well as operating electric switch-throwing devices.

# Simplex WIRES & CABLES

SIMPLEX WIRE & CABLE CO., 79 Sidney Street, Cambridge 39, Mass.

# SIMPLEX

## in Mine Cable Design . . .

### Proved Cables for Every Mine Use!

SERVICE	USE	SIMPLEX PRODUCT
MINING	Electric Drills . . . . .	TIREX SO Cord, TIREX Heavy Duty Mine Cord.
	Shot Firing . . . . .	TIREX Shot Fire Cord (Round), Simplex Shot Fire Cord (Twin).
MINING	Shuttle Cars . . . . .	TIREX Special Shuttle Car Cable (see opposite page).
	Shuttle Cars, Cutters, } Loaders, Continuous Miners }	TIREX Twin Mining Cable; Type W, without ground wires; Type G, with ground wires. Also TIREX 3-Conductor Round Cable, Type W.
	Locomotives . . . . .	TIREX Locomotive Cable; steel reinforcing strands in conductor.
	Stripping Shovels and Draglines . . . . .	TIREX High-Voltage Cables; Types W, G, SH-A, SH-B, SH-C, SH-D.
		All TIREX Cords and Cables are jacketed with CURED-IN-LEAD Selenium-Neoprene Armor. All stock sizes for mine use are marked P-101 BM.
MINE EQUIPMENT	Air Compressors (Portable) . . . . .	TIREX Twin Cables, Types W and G. TIREX 3-Cond. Round Cable, Type W.
	Air Compressors (Stationary) } Ventilating Fans } Mine Pumps } Car Pullers }	Anhydrex or Anhydroprene Cables. Both feature the exceptional moisture resistance of Anhydrex insulation and the durability of a neoprene jacket. Anhydrex cables can be installed directly in earth, in conduit and in air. Anhydroprene cables, with lighter jacket, should not be buried directly in earth.
	Track Signal Systems . . . . .	Anhydrex Multi-Cond. Signal Cable. Polyethylene-Plastex Signal Cable.
	Telephone Systems . . . . .	Anhydrex Mine Telephone Cable.
PROCESSING EQUIPMENT	Crushers . . . . .	Anhydrex Cables. Anhydroprene Cables.
	Vibrator Screens . . . . .	TIREX SO Cords. Anhydrex Cables.
	Flotation Cells . . . . .	Anhydrex Cables. Anhydroprene Cables.
SHOPS	Machine Tools . . . . .	TIREX SO and SJO (light service) Cords, Plastex Machine Tool Wire; available with light, heavy and extra-heavy insulation.
	Welding Machines } Electrode Cable } Electrode Return }	TIREX Super-Flexible Welding Cable. TIREX Single-Conductor Cable.
	Welding Machines } Power Side }	TIREX 2 and 3-Conductor Cables.
	Locomotive Wiring . . . . .	TIREX Motor Lead Cable.
	Battery Charging . . . . .	TIREX Twin and TIREX Round Type W Cables.
POWER AND LIGHTING	Aerial Distribution Systems . . . . .	Anhydrex, Varnished Cambric and Paper Insulated Cables — available with built-in messenger or messenger can be applied in field by spinner.
	Underground Distribution Systems . . . . .	Anhydrex Cables; provide resistance to water and moisture, soil acids and alkalis; have no metallic sheaths to crystallize and corrode.
	Borehole and Shafts . . . . .	Anhydrex Cables and Varnished Cambric Cables — available with a wide choice of outer coverings to meet the requirements of all methods of suspension.
	Sub-Surface Distribution . . . . .	Anhydrex Feeder Cables, Varnished Cambric Feeder Cables.
	Switchboard Wiring . . . . .	Anhydroprene Wires, Plastex Wires.
	Yard Floodlighting . . . . .	Anhydrex Cables.

Write for Catalog 1008 — "Simplex Cables for Mining"

Increase efficiency,

reduce operating costs . . .

## with **JOHNS-MANVILLE PRODUCTS** FOR MINE SERVICE

### J-M INDUSTRIAL FRICTION MATERIALS



#### WOVEN LININGS AND FACINGS

**J-M Style No. 600**, a semi-flexible lining with brass wire insertion, has been unrivalled for many years as the standard general utility lining. Wide range of application and low rate of wear make it particularly applicable for field replacements. It is strong enough for heavy shock service and will resist constant temperatures to 350F.

**J-M Style No. 900** is a readily-formed, semi-flexible general utility lining which, because of its solid woven structure, is free from ply separation. Suitable for drum temperatures of 500F.

**J-M Style No. 350**, the "standard woven" facing for general purpose service, is made with brass-inserted wire compounded with a heat-resisting impregnation. Furnished in wide range of sizes, it may be had "solid" or "formed and joined."

**J-M Style No. 510**, a dense, solid woven lining with synthetic resinous impregnation, has exceptional non-scoring properties and mechanical strength.

Backed by nearly a century of research, development and manufacturing experience, J-M products have achieved an enviable record of service to industry . . . service that has helped produce better products at lower costs. Write for further information on any of these products.

J-M Industrial Friction Materials have served the mining industry for many years, establishing many records for economies in power and maintenance on hoists, dredges, winches, shovels, draglines, aerial tramways, cranes and other types of equipment. Furnished rigid, flexible or semi-flexible in woven, moulded and block structures, they provide stabilized friction for longer periods under hotter temperatures, high pressures, heavier shock loads and faster rubbing speeds.

#### FRICTION BLOCKS AND FACINGS

**J-M Style No. 100**, with added brass particles, is designed to meet requirements for a material with low coefficient of friction. Particularly suitable where smooth, continuous tension is required.

**Style No. 140**, a rigid brake block, has exceptionally high heat-resistance, remarkable low rate of wear at high temperatures and a medium coefficient of friction.

#### MOULDED LININGS AND FACINGS

**J-M Style No. 230**, a rigid moulded lining with no brass particles, has high heat resistance with a medium friction coefficient.

**J-M Style No. 240** contains a definite percentage of brass particles which tend to increase its resistance to wear and stabilize friction characteristics.

For details on the complete line of J-M Industrial Friction Materials including a useful Friction Materials Selection Chart, write for FM-12A. Also available in Spanish, FM-21A.

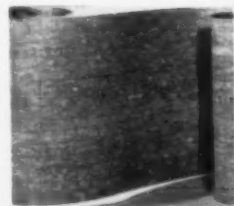
#### TRANSITE® MINE SERVICE PIPE

Asbestos-cement Transit Pipe withstands the corrosive action of acid mine drainage water, contributes important economies for water lines or wherever a durable, easily-installed pipe is required. Now, with the new Ring-Tite® Coupling, pipe goes together faster with even greater savings in installation. For complete details, write for TR-51A and TR-142A.



#### J-M PACKINGS AND GASKETS

From the complete line of J-M Packings and Gaskets . . . rod, plunger and valve stem packings, sheet packings, oil seals, metallic and non-metallic gaskets . . . you can select the one right material for maximum efficiency, long life and operating economy. J-M engineers will be glad to study your specific requirements. Write for Packings Catalog PK-3A, available in English or Spanish.



Other J-M products for mining service include: Industrial Insulations, Refractories, Corrugated Transite\* for roofing and siding, and a wide variety of other building materials and industrial products.

\*Transite is a Johns-Manville trademark registered in the U.S. and many countries of the world



# Johns-Manville

22 East 40th St., New York 16, N. Y., U.S.A.



# for generating AIR POWER

## SELECT AN INGERSOLL-RAND COMPRESSOR

- If you need air power generated by a compressor using any of these methods of drive —
- If your requirements for compressed air are between a vacuum and 15,000 pounds per square inch —
- If you need a machine within the range of  $\frac{1}{2}$  to 4000 hp —

Ingersoll-Rand is the world's largest manufacturer of compressors. The complete line includes more than 1000 sizes and types. Within this extensive selection you will be able to find a compressor to meet your most exacting requirements.

Your nearest Ingersoll-Rand engineer will be glad to help you solve your compressed air problems. He will be able to supply complete information about the compressor you need.

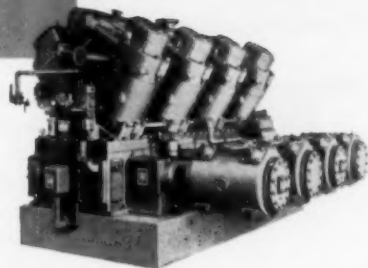


# Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

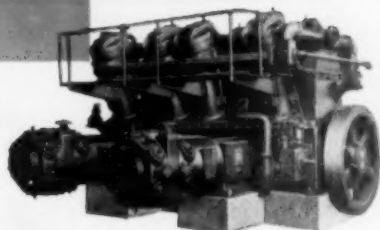
### with OIL

type SVO  
diesel  
driven



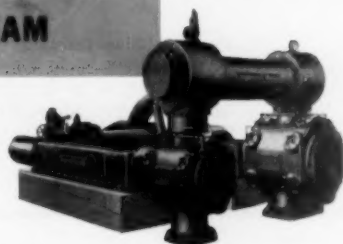
### with GAS

type KVG  
gas  
driven



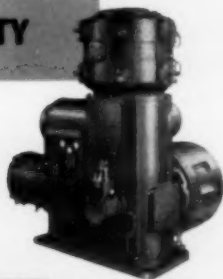
### with STEAM

type XPV  
steam  
driven



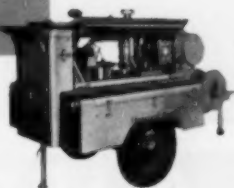
### with ELECTRICITY

type XLE,  
one of many types  
electrically  
driven



### with GASOLINE

GYRO-FLO  
gasoline driven  
portable  
(also available with  
diesel engines)



1-143

COMPRESSORS • CONDENSERS • BLOWERS • PUMPS • ROCK DRILLS • AIR TOOLS • DIESEL ENGINES

# PACIFIC MINING PRODUCTS

Superiority maintained by constant study of the equipment at work plus rigid quality

control of production of tough, wear-resistant, alloy steel components.

## PACIFIC JAW CRUSHERS

Ask for Bulletin 114

\*U.S. Patent

Offered in 6x12, 8x15, 10x20 and 10x30 sizes. Heavy-duty, all-steel construction throughout. Over-size eccentric shafts. Full-size jaw openings with reversible manganese steel jaws. Parts readily interchangeable. Also available, Feeder Screens\* and Feeder Grizzlies.\*



10x20

## PACIFIC "SLUSHMASTER" SCRAPERS

Ask for Bulletins 253 & 254

\*U.S. and Foreign Patents Applied For



### TEN SIZES

To Suit Your Requirements

MODEL	SIZE	WEIGHT
2A	26"	398 #
2A	30"	485 #
2A	34"	515 #
AB	36"	744 #
AB	42"	812 #
AB	48"	951 #

See Bulletin No. 253

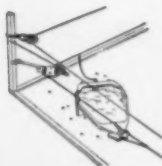
See Bulletin No. 254

2B	36"	1280 #
2B	42"	1395 #
2B	48"	1520 #
2C	60"	2360 #

1. Pacific "Slushmasters"\* are standard equipment with many leading mining companies.
2. They stand up under the toughest service.
3. They help you move more muck at less cost.
4. Our very best advertising is provided by satisfied customers. Write us for names of those in your area.

## PACIFIC SHEAVE BLOCKS

Ask for Bulletin 238



TYPE "C"  
8", 10", 12"



TYPE "CF"  
8", 10", 12"



SHEAVE ANCHOR



CARRYING BLOCK  
6", 8"

1. The only Sheave Blocks with manganese steel sheaves and side frames for toughness, shock-resistance and long life.
  2. Sheave rims are recessed into side frames to prevent rope fouling.
  3. Efficient grease seals retain lubricant and exclude foreign material.
  4. Tapered roller bearings are load-rated with extra-high safety factor.
  5. Wide throat passes square knots.
- Available in Half Side Plate and Full Side Plate Models in 8", 10" and 12" sizes with hook, shackle or safety swivel shackle.

U.S.A. and Foreign Patents Granted or Pending.

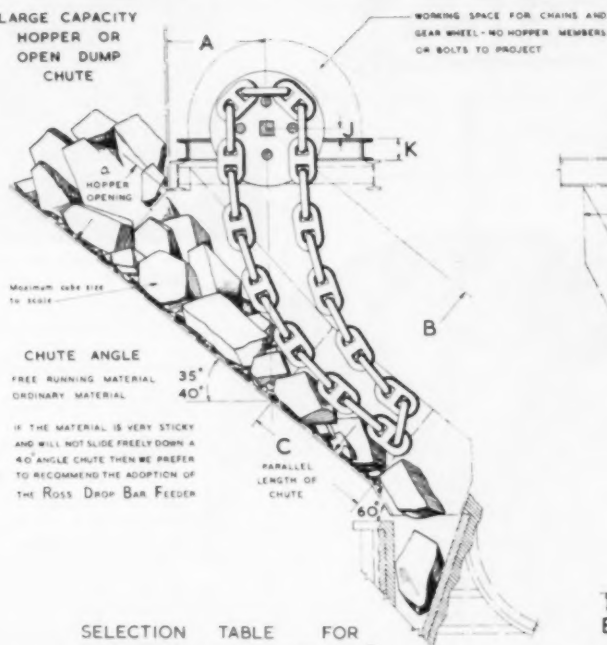
## ALLOY STEEL & METALS CO.

1848 EAST 55TH STREET • LOS ANGELES 58 • CALIFORNIA

Mailing Address: Box 58323, Vernon Station, Los Angeles 58, California

# NEW DESIGN OF ROSS PATENT CHAIN FEEDERS

LARGE CAPACITY  
HOPPER OR  
OPEN DUMP  
CHUTE



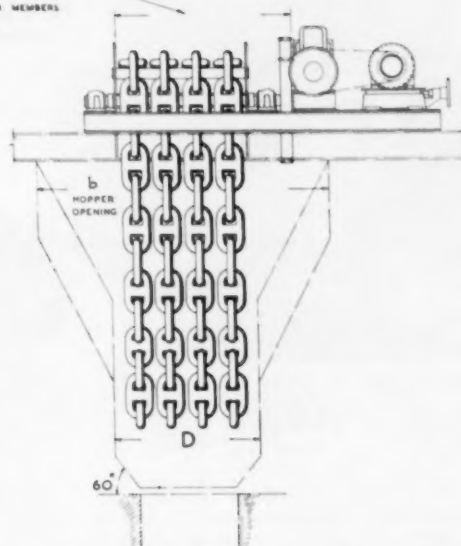
CHUTE ANGLE

FREE RUNNING MATERIAL  
ORDINARY MATERIAL

IF THE MATERIAL IS VERY STICKY  
AND WILL NOT SLIDE FREELY DOWN A  
40° ANGLE CHUTE THEN WE PREFER  
TO RECOMMEND THE ADOPTION OF  
THE ROSS DROP BAR FEEDER

PARALLEL  
LENGTH OF  
CHUTE

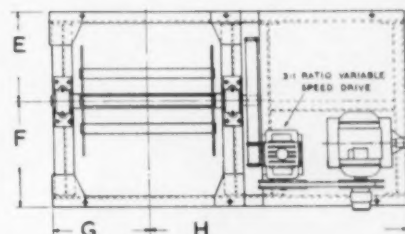
WORKING SPACE FOR CHAINS AND  
GEAR WHEEL—NO HOPPER MEMBERS  
OR BOLTS TO PROJECT



SELECTION TABLE FOR  
PRIMARY JAW CRUSHERS\*

FEEDER SIZE	DIMENSIONS IN INCHES						WEIGHT IN CWTs	SCALE
	MAXIMUM PIECES	CRUSHER	HOPPER	OPENING				
	CUBE	OCCASIONAL SLAB	MOUTH SMALLER THAN STANDARD SIZE	a	b			
3 W	9	9 x 13.18	18 x 12	18	54	23	1/30	
4 W	12	12 x 18.24	24 x 16	24	72	48	1/40	
5 W	15	15 x 22.30	30 x 20	30	90	85	1/50	
6 W	18	18 x 27.36	36 x 24	36	108	140	1/60	
7 W	21	21 x 32.42	42 x 28	42	126	220	1/70	
8 W	24	24 x 36.48	48 x 32	48	144	325	1/80	
9 W	27	27 x 40.54	54 x 36	54	162	450	1/90	
11 V	33	33 x 50.66	66 x 44					

\* THIS TABLE IS A GUIDE TO JAW CRUSHER INSTALLATIONS. OTHER FEEDING  
DUTIES TO WHICH THE ROSS CHAIN FEEDER IS APPLICABLE ARE:—  
GRATORY CRUSHERS HAMMER MILLS ROPEWAYS  
CONE CRUSHERS CONVEYORS SKIPS, WAGONS  
ROLL CRUSHERS SCREENS AND MINE CARS  
REFER DETAILS OF DUTY TO OUR ENGINEERING DEPT FOR RECOMMENDATIONS



FEEDER SIZE	DIMENSIONS IN INCHES											
	A	B	C	D	E	F	G	H	J	K	L	
3 W	19	39	24	27	17	19	18	60	22	4.2	22½	
4 W	24	51	32	36	22	26	24	64	3	5.2½	30	
5 W	30	63	40	45	28	32	30	80	3½	6.3	37½	
6 W	36	75	48	54	33	39	36	96	4½	7.3	45	
7 W	42	87	56	63	39	45	42	112	5½	8.3	52½	
8 W	48	99	64	72	44	52	48	128	6½	9.3½	60	
9 W	54	111	72	81	50	58	54	144	7½	10.3½	67½	

OTHER "ROSS" UNITS: ROSS DROP BAR GRIZZLY FEEDER  
ROSS TWO-ROLL GRIZZLY

ROSS SCREEN & FEEDER CO.  
100 QUIMBY STREET  
WESTFIELD, N.J., U.S.A.

ROSS ENGINEERS LTD.  
11 WALPOLE ROAD  
SURBITON, SURREY, ENGLAND

CANADIAN LICENSEE: E. LONG LTD., ORILLIA, ONTARIO

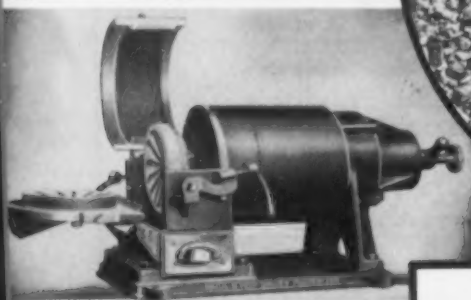
# BICO BRAUN LABORATORY CRUSHERS • PULVERIZERS • GRINDERS

The Standard of Accuracy • Dependability • Simplicity



**CHIPMUNK CRUSHER CAT. 24136**

Crushes  $2\frac{1}{4}$ " quartz to  $\frac{1}{4}$ " chips at rate of 800 lbs. an hour. Absorbs shock and impact of constant use. Economical and easy maintenance. Compact. Accessible. Crushes any friable material.



**PULVERIZER CAT. 24267**

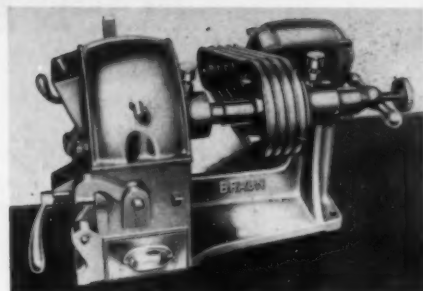
Direct-driven for continuous day after day production line operation. Needs no skill to operate. No belts nor gears. Ball bearing. Factory lubricated.



**PULVERIZERS CATS. 24350-54**

For fast, clean preparation of any friable, metallurgical, industrial or chemical samples. Reduces  $\frac{1}{4}$ " ore to 100 to 200 mesh powder at rate of 1 lb. a minute. Simple to operate and maintain. Durable.

## BICO INC.



**PULVERIZER CAT. 24253**

Reduces  $\frac{1}{4}$ " or smaller material to 100 to 200 mesh in one grinding. Fineness of mesh easily adjusted. Interior completely accessible for easy cleaning.



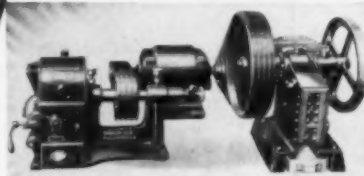
**CAT. UA51**



**CAT. UA52**

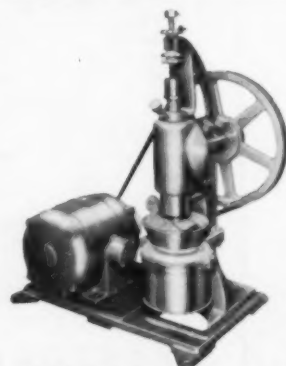
### PULVERIZER PLATES

Scientifically designed contour pattern provides most efficient pulverizing. Wear-resistant alloy. Vibration-free. Long life. Special plates available.



**COMPLETE CRUSHER-PULVERIZER ASSEMBLY CAT. 24264-5**

Portable space-saving unit consisting of choice of small or large Chipmunk Crushers and UA Pulverizers with motor on common base. Saves time and operation costs.



**SAMPLE GRINDERS CAT. 24272-78**

For light duty laboratory use. Adjustable for degree of fineness in grinding. Completely accessible for cleaning. Dust-proof. No loss of material. Minimum space required.

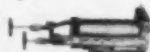
### ASSAY COMBINATION FURNACE CAT. 30905

Maintains even temperature throughout. Capacity ten 20 gram crucibles. Muffle size 6x10x4". Compact. Efficient.



**PROPANE BURNER CAT. 18519**

Easy to install. No priming, pumping or generating.



**CARY HYDROCARBON GASOLINE BURNER CAT. 18500**

Capable of 100% combustion. Starts easily. Quickly cleaned. Fast vaporization. Sizes 2 and 4 1/2".



**HERMAN INQUANTS CAT. 23933**

Little pellets of lead bullion containing definite amounts of silver. Insures accurate parting. Avoids weighing silver.



**BICO-PORTER SIEVE SHAKER NO. 57400**

Portable, light-weight, strong, sturdy. Use in laboratory or on field. Has adjustable backward-forward-up-down movement. Accommodates 6 standard 8" sieves. Wt. 67 lbs.



**CALMIX CUPELS CAT. 34430**

For uniform delivery and absorption power. Cuts down silver loss.  $1\frac{1}{4}$  and  $1\frac{1}{2}$ " diam.

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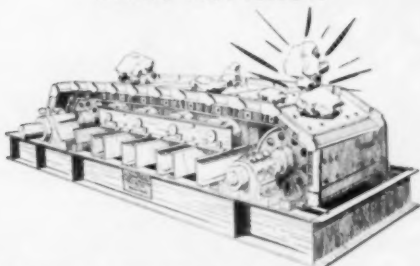
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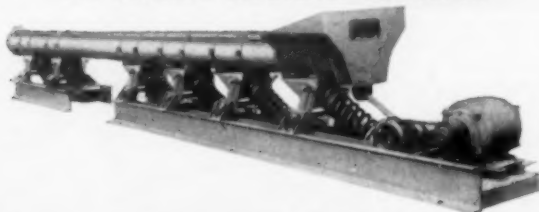
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## AMSCO PAN FEEDERS



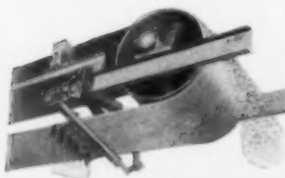
Stephens-Adamson AMSCO Pan Feeders are built to operate under the most severe conditions. They withstand crushing impact, repeated shocks and abrasive loads—handling enormous tonnages of ore dumped upon them with minimum maintenance year after year . . . All wearing parts of the feeder, such as pans, chain, track rollers, sprockets and tail idlers are cast of manganese steel. This is the toughest steel known—and actually grows tougher with use. Manganese steel, plus the patented design of the feeder, combine to produce a unit of extreme strength with a minimum of weight. AMSCO Pan Feeders are individually engineered in sizes from 22" to 102" in pan width, with centers up to 100 feet and capacities to 2000 tons per hour. The AMSCO will operate up inclines to 16 degrees. Integral side flanges on the pans prevent leakage or spillage of material. For more complete information on these and other types of feeders, write for S-A Feeder Bulletin 154.

## S-A NATURAL FREQUENCY CONVEYOR



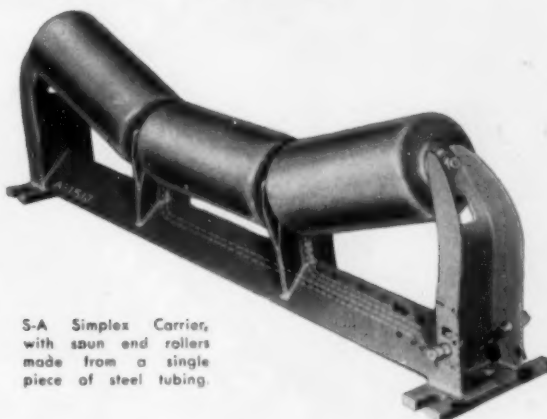
Power regenerated by coil springs is utilized to convey bulk materials at low cost. Conveyor is made in 10-foot sections . . . one drive serves several sections. Balance frame eliminates need for heavy, rigid supports. Conveyor features quiet operation, low headroom and low power and maintenance costs. Write for Bulletin 353.

## S-A SPRING-TYPE CONVEYOR BELT CLEANER



Prolongs belt life by removing wet or dry materials from belts before they can be ground in. Multiple blades in adjustable-pressure spring assembly are reversible and quickly replaceable. No moving parts, no power required. Easily installed and adjustable to fit any size conveyor. Write for Bulletin 651.

## S-A CARRIERS



S-A Simplex Carrier, with spun end rollers made from a single piece of steel tubing.

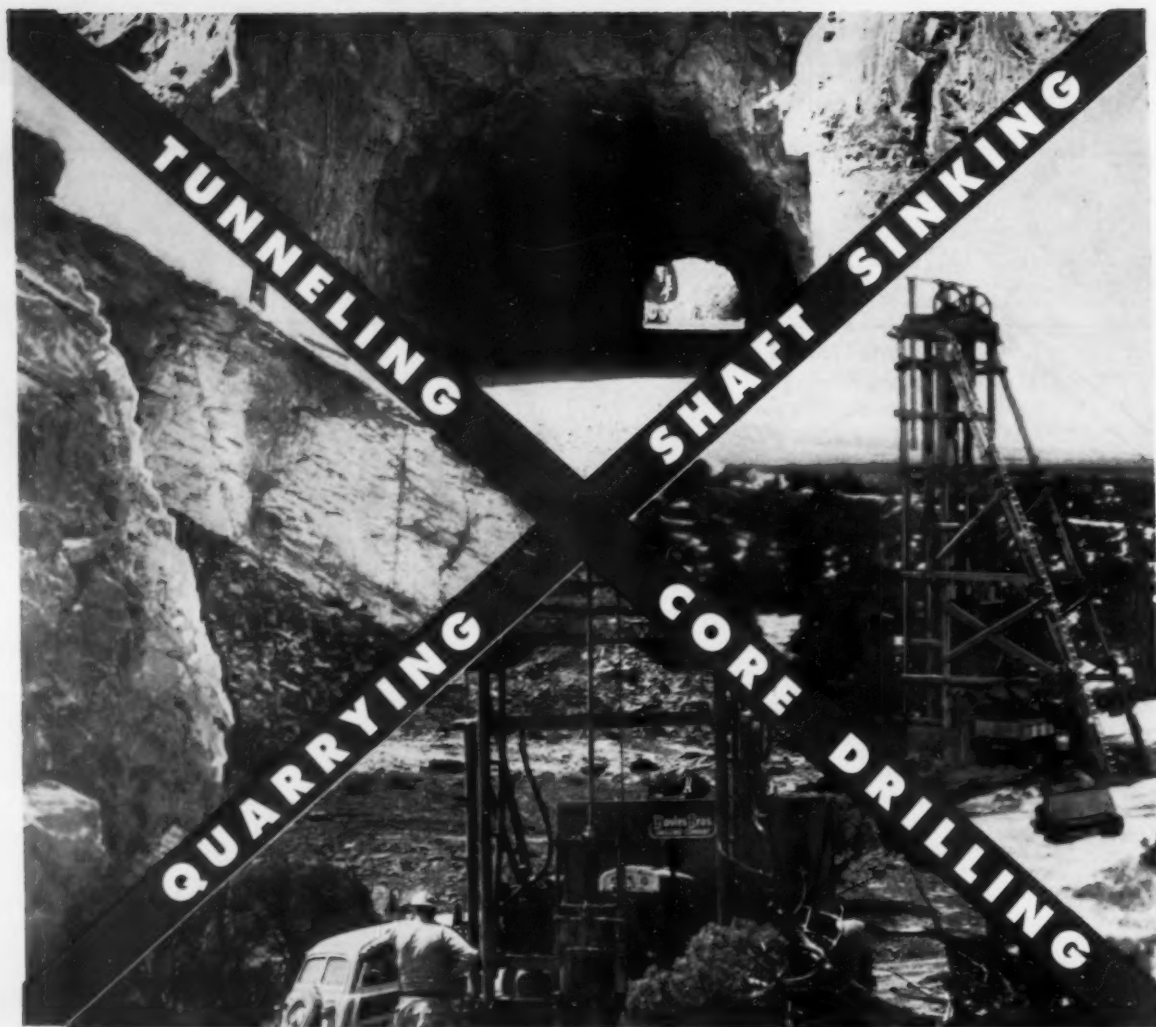
S-A manufactures belt conveying systems of all types and a complete line of carriers for all operating conditions. Shown here is the S-A Simplex Carrier, designed for rugged jobs and exposure to dust and weather through years of service. Each roller is spun from a single piece of steel tubing. Roller bearings in seamless steel tube hubs are protected by die cast labyrinth seals. The all steel frame is flanged, reinforced and accurately jig welded for great strength and elimination of unnecessary weight. Improved lubrication is provided each roller from one or both sides of the carrier. Available with 5" or 6" rollers for conveyor belts from 18" to 60" wide. Close spacing of rollers provides maximum belt support, with belt automatically centered without need for side guide rollers. Write for Bulletin 2-C.

## S-A ROLLER TYPE HOLD BACKS




Prevents reversal of loaded conveyors or bucket elevators when power is interrupted. Mounts on conveyor head shaft extension. The instant headshaft stops rotating, the Hold Back roller engages the wide-faced drum with a gentle, positive grip. No ratchets, no roll-back or shock. Releases automatically when power is applied. Eleven sizes for maximum torque of 6,000 to 500,000 lbs. Write for Bulletin 651.






## BOYLES...at the crossroads of giant projects

The operations pictured above indicate the scope and flexibility of the Boyles service. A half century of experience in this specialized field is your assurance of highly competent DIAMOND CORE DRILLING, GROUTING, ROCK BREAKING, MINING, QUARRYING, SHAFT SINKING and TUNNEL DRIVING. Contact us by writing or personal call.



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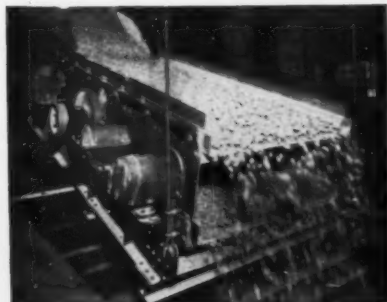
Atlanta 3, Ga.  
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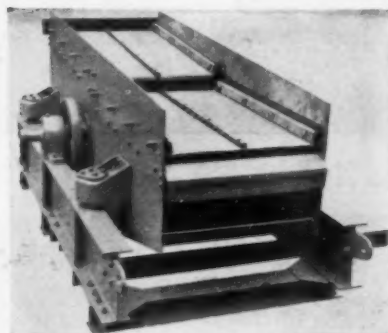
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Los Angeles 57, Calif.  
2404 W. Seventh St.

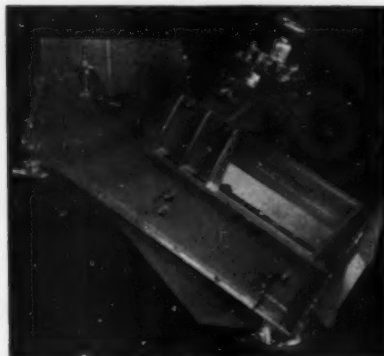
Canadian Plant & Office—St. Catharines, Ontario



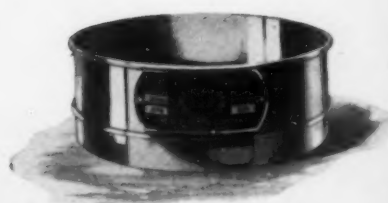
Ty-Rock Screen (Discharge chutes removed to show material)



Tyler-Niagara Screen



Hum-mer Screen



Tyler Standard Screen Scale Testing Sieve

### WOVEN WIRE SCREENS

Supplied in all meshes and metals and for all purposes. Tyler Woven Wire Screen is noted for its accuracy and dependability. More than 7,000 specifications are manufactured, many of which are kept in stock ready for immediate shipment.

Write for Catalog 74, Specification Tables of Tyler Woven Wire Screens.

### TY-ROCK SCREENS

This full-floating circle-throw screen combines immense capacity with low operating costs — especially for coarse and medium sizing. This is the ideal screen wherever huge tonnages of coal is handled and where flat or low angle screening is desired. Send for Catalogue 66.

### TYLER-NIAGARA SCREENS

High-speed circle-throw screens for economical screening of coal products. Send for Catalogue 64.

### TY-ELECTRIC HEATED SCREENS

The Ty-Electric System of electric heating of Ty-Rock & Hum-mer Screens represents the most recent development in screening damp materials. The woven-wire screens are heated by passing electric current through the wires. Heat keeps the surface of the wire dry so that fine damp particles will not stick on the wires and blind the openings. Send us details of your damp screening problems so we can make recommendations.

### TYLER HUM-MER SCREENS

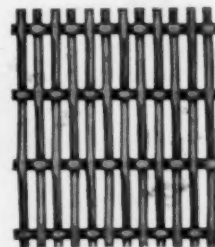
The Hum-mer was the first electrically vibrated screen and is still, by far, the lowest in operating cost for accurate sizing of medium and fine material. The Hum-mer employs less than one H.P. per vibrator and is furnished in one, two or three deck units in both open and closed models. Send for Catalogue 63.

### TYLER TESTING SIEVES AND TESTING SIEVE SHAKERS

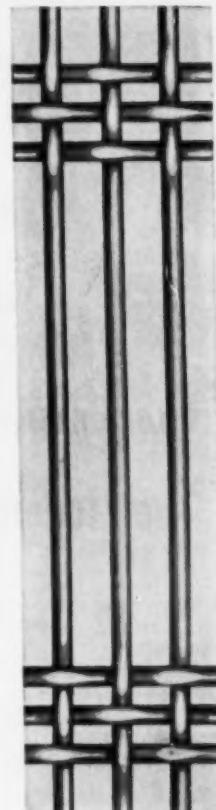
Tyler Standard Screen Scale Testing Sieves are the accepted standard for sieve testing throughout the world. The Ro-Tap Testing Sieve Shaker and the Ty-Lab Tester assure comparable, accurate data. Send for Catalogue 53.



Tyler Hook-strip and bent edge for screen sections



Ton-Cap Screen Cloth



Ty-Rod Screen Cloth



Ro-Tap Testing Sieve Shaker with Tyler Sieves



**JOY STOPPERS**—Lightweight and heavy-duty models with standard or telescopic feed, steel changes to 36", short overall length. Write for Bulletin B7-G.

# ...UNDERGROUND PRODUCTION PROBLEMS ?

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The Modern **JOY** Way

Whatever your mining problem, there's a modern Joy machine to handle the job quickly, easily, efficiently.

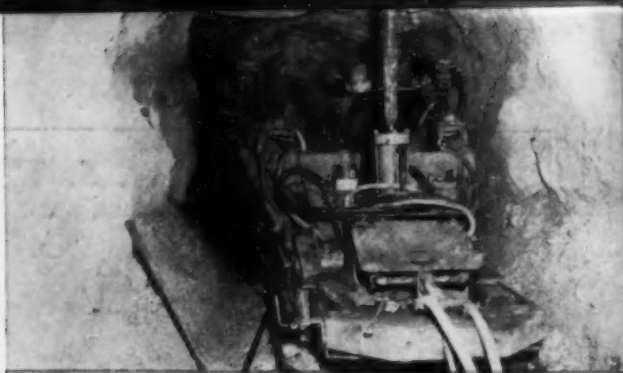
Select the equipment in which you are most interested, and write TODAY for detail-packed bulletins. Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa. In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario.

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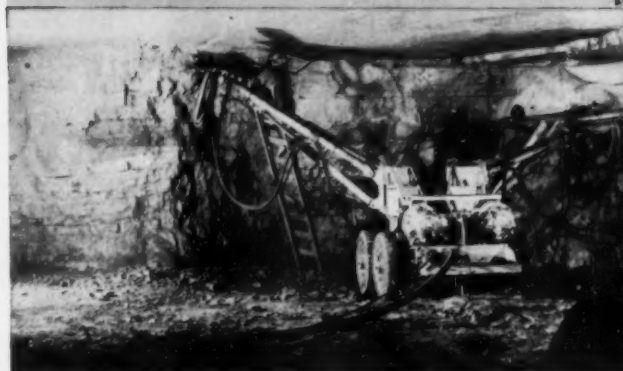
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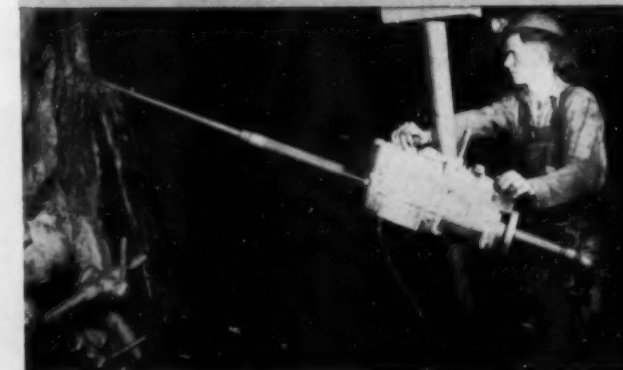
**JB JUMBO**—Track-mounted Jumbo with drills on hydraulically-controlled Hydro Drill Jibs for fast, easy drilling. Ask for Bulletin B7-F.



**DRILLMOBILE**—Rubber-tired, self-propelled Jumbo with drills on Hydro Drill Jibs. Long chain feeds. Bulletin B7-F.



**AIR LEG**—Easy-to-handle air leg with "one-hand control" built into drill backhead. Perfect in combination with Joy LM-47 Drill. Bulletin B7-M.



**NS-15 CORE AND BLASTHOLE DRILL**—Air-driven rotary drill for column mounting. In-line drive. Choice of speed ranges. Bulletin D-32.

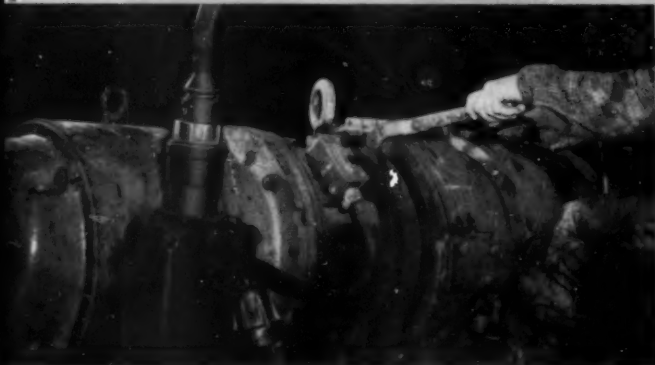




**18-HR-2 LOADER**—High capacity loading machine for rock and ore. 12 tons per minute. Ruggedly built to withstand rough usage, abrasion. Bulletin J-108.



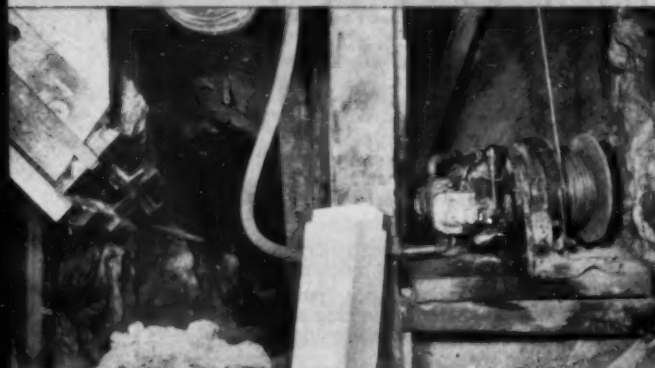
**SHUTTLE CARS**—Cable reel, battery, or diesel-electric types in various capacities. Extra rugged for rock and ore haulage. Bulletin J-202.



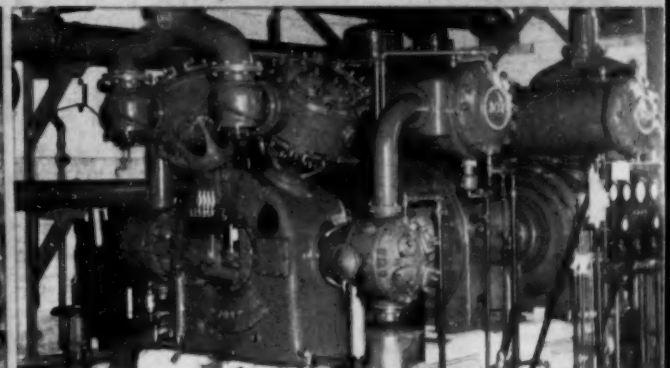
**ELECTRICAL CONNECTORS**—Watertight, one-piece Neoprene connectors for use with any electrical mining equipment. Sizes and styles for all uses. Bulletin B-36.



**JOY CONVEYORS**—Complete line of belt, shaker and chain conveyors for any underground application. Bulletin LD-102.



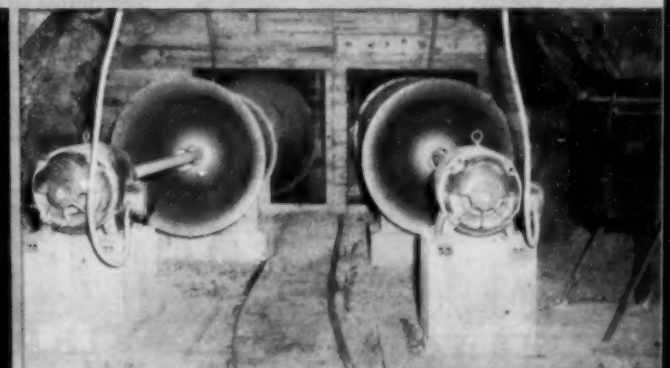
**SINGLE DRUM HOISTS**—Air or electric drive, lifting capacities 500 to 3500 lbs., rope capacities to 1500 feet. Bulletin 76-X. Also single and two-drum shaft hoists to 150 HP.



**AIR COMPRESSORS**—Dependable air power supply. Displacements from 81 to 3896 CFM. Single and two stage units for every need. Bulletin M-201.



**SLUSHERS**—Two and three-drum models, 5 to 150 HP, rope pulls to 15,000 lbs., air or electric drive. Bulletin 76-Y.



**AXIVANE FANS**—Portable blowers, adjustable-blade fans, and large mine fans. A size for every ventilating job. Bulletin J-607.

# 1 Crusher

that does the work of 2 or more!



## WILLIAMS HEAVY DUTY Hammer Mills

One Williams Hammer Mill will do your complete crushing job in a single operation—reduce production costs as much as half—save up to 75% of initial equipment expense.

- ✓ No primary or secondary crushers required.
- ✓ Eliminates extra drives, conveyors and other equipment, foundations and housings for additional machines.
- ✓ Cuts manpower, downtime, maintenance, parts replacement, power requirements and other operating costs.

*There's A Williams Hammer Mill That Fits YOUR Needs Exactly*

**SUPER-SLUGGER** . . . Crushes stone as big as a 2½-yard dipper can handle, and reduces them to 1½", ¾", or down to agricultural limestone, in **one operation!** Up to 550 ton hourly capacity.

**SLUGGER** . . . Makes 1½", ¾", or agstone from 10" stone in one operation! Output up to 100 tons hourly.

**NF & GA MODELS** . . . Reduces 4" to 6" stone to any size from ½" to 20 mesh. Capacity up to 200 tons hourly.

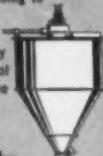
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### WILLIAMS LINE IS COMPLETE



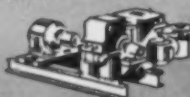
**ROLLER MILLS**—IMPACT and DRYER MILLS, for fine grinding to 400 mesh or micron sizes.



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**VIBRATING SCREENS**—in any size for any job. 1 to 3 decks, open or enclosed.



**HELIX-SEAL MILLS**—for dust-free grinding, and for wet, sticky, greasy materials.

**COMPLETE "PACKAGED" PLANTS**—for crushing, grinding, separating.

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## *SuperDuty*® DIAGONAL-DECK CONCENTRATING TABLES



*New!* Models HCRD and HCCD provide doubling of discharge capacity for high gravity components of a table feed. (Patented)

### DIAGONAL-DECK Tables

DIAGONAL-DECK Deister-Overstrom Concentrating Tables have been accepted as the standard the world over for more than a quarter of a century. Leading this line of outstanding and time proven tables is the new *SuperDuty* DIAGONAL-DECK table, now firmly established by substantial commercial applications as the most advanced in features, performance and practical advantages.

### THE *SuperDuty* TABLE

- OFFERS HIGHER CAPACITY—Small middling loads, a direct result of the DIAGONAL-DECK, plus greater efficiency of CONCENCO® Head Motion means more tons of new feed handled per day per table.
- SURPASSES IN RECOVERY any other concentrating table built while maintaining comparable or higher feed and product capacity.
- MAKES HIGHER GRADE PRODUCTS because "fanning out" action of the DIAGONAL-DECK permits more accurate cutting of product yield.
- YIELDS THE GREATEST PROFIT by its overall efficiency in performance and matchless operating economy.
- REQUIRES ONLY 2 H.P. Motor on the No. 6 Ore Table for starting and substantially 1/2 H.P. under continuous operation. The No. 7 Coal Washing Table requires only a 3 H.P. motor to start and substantially 1 H.P. under continuous operation.
- OFFERS A RECORD MAKING HEAD MOTION. The CONCENCO Anti-Friction Head Motion is a modern, efficient mechanism far ahead of the field. First in application of anti-friction bearings, its leadership has been maintained over two decades. Outstanding performance is fully verified through field-wide acceptance.
- IS THE SMOOTHEST AND EASIEST RUNNING table ever built, by virtue of its sturdy balanced supports, deck operating design and outstanding head motion.
- IS A COMPLETE MACHINE—embracing more than just a head motion, deck and a few slide bearing units requiring the addition of adequate frame and support elements to build into a finished and properly aligned machine that can be completed only at user's full responsibility and extra expense.
- CANNOT BE EQUALED FOR LOW COSTS in operation and maintenance.
- IS DEFINITELY OUT IN FRONT as your best, safest and most profitable choice considering both your investment and operating dollars.



### *SuperDuty* DIAGONAL-DECK Ore Tables

**Minerals—Metallic—**For the recovery of mineral values from gangue, for the differential separation of complex minerals, DIAGONAL-DECK Deister-Overstrom Tables long proved their value. A logical development from these sturdy forerunners, the *SuperDuty* DIAGONAL-DECK Concentrating Table is today proving itself the most highly developed and successful wet gravity concentrating apparatus in the world's leading mills. Used ahead of flotation, these tables effectively eliminate barren coarse gangue and reduce the tonnage for fine grinding; relieve the pulp of a large part of the mineral load and lessen the burden on the more intricate flotation process. Following flotation, tables are used to recover the tarnished, oxidized or carbonate mineral particles that are so ineffectively recovered by flotation.

*SuperDuty* DIAGONAL-DECK Tables used as pilots in flotation guide the operator in regulating the flotation oils and reagents. Pilots are used on concentrates, middlings, intermediate products, tailings and are placed in various parts of the flow-sheet.

On carbonate or oxidized ores especially, these tables have proven the simplest and most economical method of concentration.

**Minerals—Non-Metallic—**The use of tables on non-metallic minerals is now general. For the separation of silica, feldspar, iron and granular particles from kaolin and in the recovery of mica, garnet, silica, cyanite, barytes, fluor spar, graphite, phosphate, potash, etc., tables have proven their commercial value. *SuperDuty* DIAGONAL-DECK Tables are used successfully on the most difficult separations; for example: the differential concentration of barite-iron-silica or garnet-silica-mica.

**Recovery of Values from Residues—**The residual sands and ashes resulting from operation of brass and other metal foundries have a high metallic content. Formerly this sand was washed by hand and an inefficient recovery made. *SuperDuty* tables are now used on foundry residue and efficient recovery is made of even the very finest metallics. Copper, brass, tungsten, zinc and many other metals are recovered from waste materials at a substantial profit.

WRITE FOR CATALOGS

Patents on this equipment owned or controlled by The Deister Concentrator Co. Trade-marks registered in U.S. and foreign countries.

CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

[World Mining Section—263]

263



## SuperDuty DIAGONAL-DECK Coal Washing Tables

The SuperDuty DIAGONAL-DECK Table cleans either bituminous or anthracite coal. Although most widely used on the sizes finer than  $\frac{1}{2}$ ", installations on sizes up to  $1\frac{1}{2}$ " are eminently successful. Conversely, because of ultra mobility and smoothness of deck operation, effective work is now possible on extremely fine sizes—within the minus 48 mesh range. Clean coal is being recovered in many instances from the refuse products of other coal cleaning devices, both with and without recrushing. Another source of table feed is the undersize from dewatering screens which follow other coal cleaning machines. Reject materials forming culm banks, river deposits and waste piles may in many instances be reclaimed. In fact, the SuperDuty table may be used on any cleaning problem where there is a specific gravity difference between relatively free particles of coal and refuse.

**Design**—SuperDuty DIAGONAL-DECK Coal Washing Tables are designed for efficient cleaning of coal, especially those sizes which jigs and similar machines fail to handle efficiently and profitably.

**Installation**—DIAGONAL-DECK Coal Washing Tables may be installed singly or in battery. Number of tables required is governed by tonnage to be handled. Tables in battery installation operate as independent units, consequently, individual tables may be cut in or out to meet variations in production schedule profitably.

**Investment**—SuperDuty DIAGONAL-DECK Coal Washing Tables represent the lowest initial investment regardless of size of installation. These tables meet the requirements for efficient cleaning, low operating costs and production flexibility.

**Operation**—This process, employing wet gravity principles, offers the greatest simplicity in operation, while full visibility of separation accounts for the finest results by unskilled attendants.

No other process can equal their performance on sizes  $1\frac{1}{2}$ " to finest dust. High efficiency is attested by their elimination of 90% or better of the free impurities including slate, sulphur, pyrite, shale, fire clay, gravel, bone and tramp iron. Simultaneously loss of coal to refuse is minimized beyond the possibilities of other processes.

**Capacities**—Depending on type and size of coal, washability and cleaning requirements, capacities of DIAGONAL DECK Tables run from 4 to 20 tons per hour.

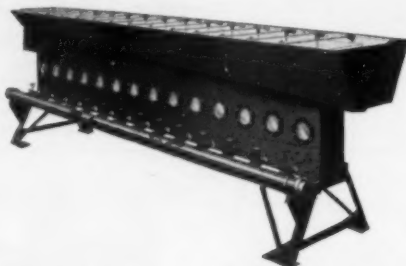
**New Specialized Models**—The new Models HCRD and HCCD are specialized designs of the No. 7 and No. 6 sizes, respectively, of the SuperDuty DIAGONAL-DECK Concentrating Table. In these models, that portion of the deck periphery available for discharging high gravity feed components is doubled, without subtracting from the low-gravity discharge periphery, thereby doubling available high-gravity discharge capacity, with attendant increase in table feed capacity. These models are intended for the high capacity handling of feeds wherein the high-gravity fraction represents a relatively large percentage of the total. Phosphate rock, coal and the ores of iron and chrome provide typical fields for application. For other feeds, wherein the high-gravity fraction represents a relatively small percentage of the total, the well known, regular models of SuperDuty DIAGONAL-DECK Concentrating Tables are applicable, as in the past.

## CONCENCO DISTRIBUTORS

The CONCENCO Revolving Feed Distributor, built in six types, is a heavily fabricated, all steel machine with motor drive requiring only  $\frac{1}{2}$  H.P. in operation. The Distributor effects perfectly a splitting of feed sluiced to its revolving tank, into any desired number of equal portions from two to sixteen, in some cases more. It is especially suitable for efficiently feeding any number of circuits or machines in battery for higher overall efficiency. It is unexcelled for feeding concentrating tables.



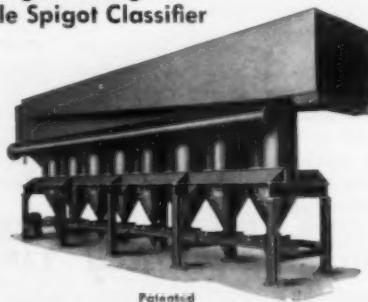
## CONCENCO CPC Classifiers



CONCENCO Constriction Plate Classifiers of all steel welded construction are furnished in any number of cells from 2 to 14 to meet requirements. Each cell is square in horizontal cross section and consists of three chambers: the pressure chamber at the bottom; the sorting column immediately above and separated from the pressure chamber by a constriction plate; and the launder section above the sorting column, which is materially increased in cross section to reduce velocity of flow.

## CONCENCO Super Sorter

Giant High Tonnage  
Multiple Spigot Classifier



The CONCENCO SuperSorter does what engineering opinion has heretofore held impossible . . . it sorts granular materials hydraulically into a number of uniform, graded products on a low cost, high tonnage basis. The barriers of the past have been overcome in the CONCENCO giant classifier, which maintains teeter and zone densities hitherto considered impossible in large cell cross-sections needed for handling substantial capacities.

### Applications

The CONCENCO SuperSorter meets that long-felt need for a multiple spigot, rising current classifier of sufficiently high capacity to handle economically coal, sand, iron ore, phosphate rock and similar granular minerals.

### Capacities and Performance

The first battery of four 8-cell units installed has been in successful commercial operation for over five years, classifying  $\frac{1}{4}$ " x 0" feed to a large battery of coal washing tables. Each SuperSorter unit handles in excess of 100 tons per hour, demonstrating phenomenal performance for both tonnage and efficiency. In the production of concrete sand, to the strictest engineering specifications, the SuperSorter has proved eminently successful. On minus 8 mesh sand, an 8-cell unit produces 130 tons per hour of accurately classified products.

### Dimensions

The size and proportions of the CONCENCO SuperSorter may be quickly visualized from the following general data covering the 8-cell machine. The overall height, including 6" H-section supporting legs, is 14 feet. It is 6 feet wide and 40 feet long. Approximate weight, empty, is 16 tons.



## THE DEISTER CONCENTRATOR COMPANY

### Operation

A feature of the CONCENCO SuperSorter is the innovation for control of spigot discharge. Each classified spigot product is intermittently drawn off, with measured precision, from a quiescent bed at the bottom of the cell. High capacity discharge of product is maintained with minimum water content and without disturbing the rising water currents or unbalancing classification in the sorting column immediately above. The novel constrictor valve mechanisms that control the draw-off from each cell are readily adjustable in operation over a wide operating range from open 90%, to closed during 100% of each cycle. The Constrictor valves permit a positively measured and uniform discharge rate from each cell—a condition essential to the high efficiency of the SuperSorter and to overall efficiency when operating in conjunction with concentrating tables or similar devices.

### Water and Power Requirements

Water requirement is low for apparatus of this type. Hydraulic water is brought to the individual cells by means of a 12" header pipe and regulated with easily adjustable pinch valves. The only power required is for actuation of the tandem operated constrictor valve mechanism. A 1½ horsepower motor with gear reducer amply provides for even the largest multiple cell units. There being no other moving parts, operating costs are amazingly low.

### Range

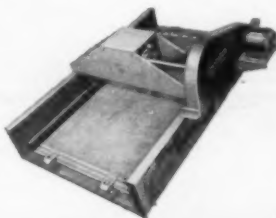
CONCENCO SuperSorters are now available in a range of sizes to meet the needs of any high tonnage classification problem. The individual cells are incorporated with a rectangular, partitioned tank provided with feed entry, adjustable overflow weirs and overflow exit. All construction is of heavy type.

**The Leahy®**

Now Available with FlexElex

Due to their rugged construction and mechanical simplicity, Leahy Vibrating screens far outdistance other devices in overall equipment life.

The heavy duty vibrator, doubly dust-proofed type and enclosed and forming an integral part of the structural steel bridge assembly, delivers a stronger and more positive vibration than ever before, superenergizing every square inch of screen jacket with the characteristic stratifying-screening-unblinding vibration, that is so highly acclaimed and profitably enjoyed by Leahy users. Leahy differential vibration guarantees open meshes, which in turn insure higher screening efficiency and capacity.



The Guaranteed Screen

**Uses**—For wet or dry screening from 3" opening down to fine mesh; also for dewatering and heavy media recovery. Unexcelled for screening at fine meshes.

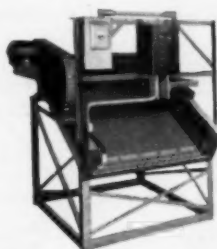
**Features**—The new Leahy Screen has simplicity combined with proved ruggedness. Installation is inexpensive, with supports figured for dead load only, because no vibration goes into the screen frame or supports and only ½ H.P. is used to operate. The heavy duty vibrator, running in-oil at 265 r.p.m., produces 1200 to 2000 v.p.m. as needed. Maintenance is negligible—averaging less than 1% of first cost annually. Screen jacket economy is reflected in costs as low as \$0.000574 per ton treated. The quickest jacket change feature offered in screening equipment combines with the use of reasonably priced stock jackets, woven wire or perforated plate, requiring no fabricated attachments or special preparation.

**Types and Sizes**—Open type, totally enclosed dustproof type; single or double surface; single vibrator; double vi-

CATALOGUE, SURVEY & DIRECTORY NUMBER, 1955

brator; belt drive or motor drive in sizes: 17x32 in.; 2x4 ft.; 3x5 ft.; 3x6 ft.; 3x7 ft.; 4x5 ft.; 4x6 ft.; 4x7 ft.; 4x8 ft. Size designation indicates the overall dimensions of the screen jacket. *Special sizes built to order.*

## FlexElex Electric Heating of Wire Screen Cloth



The FlexElex heating arrangement is engineered especially for fine mesh screening of damp materials such as ores, fine coal, clays, shales, pulverized limestone, chemicals, etc.

A low voltage, high amperage electric current is passed through the screen cloth, causing it to heat sufficiently that the wires are kept warm and dry, to prevent any build-up of dust-size fines that contribute to blinding.

When the advantages of FlexElex are added to the Leahy's unblinding action for disposing of intermediate size particles, the result is an efficiency and capacity never before achieved in the screening field. Screening at an accustomed mesh, capacity is stepped up to an astounding degree. On the other hand the same capacity may be maintained with smaller mesh openings formerly considered impractical.

**DESCRIPTION.** The FlexElex electric jacket heating system for the average size Leahy Screen comprises: a 15 KVA dry type, single phase transformer with line voltage primary and low voltage secondary, complete with switches and controls for closer adjustment of current and heat used; high capacity copper bus bars connecting transformer terminals to copper contact bars of screen jacket assembly through short, flexible copper connectors, permitting quick attachment or detachment at diagonally opposite corners of the screen; complete insulation of the wire jacket from all other metal parts of the screen; and all necessary supporting brackets.

**POWER REQUIRED** for the average size screen amounts to only 9 or 10 KVA under normal temperature and moisture ranges. With the FlexElex system it is easy to regulate the current to meet day to day or season to season operating conditions with optimum results at minimum power consumption.

**SCREEN JACKET CHANGE TIME.** Screen jacket changes can be made with the same ease as with conventional type Leahy Screens. Furthermore, jackets need not be changed as often. Field experience shows that even with less expensive grades of cloth, the life of electrically heated jackets, requiring no heating or brushing, is several times that of unheated cloth.

**OVERALL ECONOMICS.** Users say that the elimination of attendants for cleaning screen cloth, as well as materially reduced power consumption on the grinder (resulting from the accompanying reduction of circulating load, credited to increased screening efficiency of FlexElex equipped screens), generally more than offsets the cost of the equipment and power used to heat the screen cloth.

### CONCENCO Spray Nozzle—Water Sprays

CONCENCO Spray Nozzles are unique and efficient. They are easy to apply. A hole is drilled in the pipe and the nozzle bolts on by means of a brass "U" bolt. No threading is necessary. The jet is a flat line spray very effective in washing or screening. The jets can be perfectly aligned one with another for sheet flow washing. The J-132 series with orifices of ¼" to ¾" fit 1" to 2" pipe. The J-136 series with orifices of ⅜" to 1" fit 2" to 4" pipe.





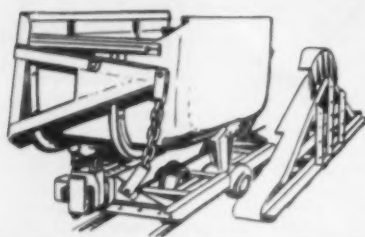
# FOR YOUR PRODUCTION

Our shops are known to mining men throughout the world for custom building of mine cars and other haulage equipment. Here are some of the standard and custom designed items made by Card. For complete information, write or phone.

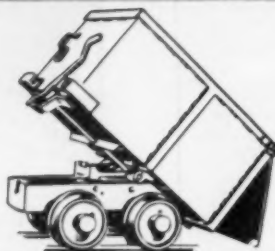
Frequently modification of a standard Card

car will serve to meet every specification of special haulage at very little more than the cost of a standard car. Our engineers can show you how to standardize your mine haulage with cars that are custom built for you alone. Many mine operators find they cannot afford even to make car

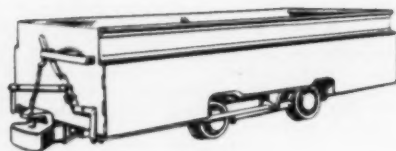
Granby Car with Dump Block



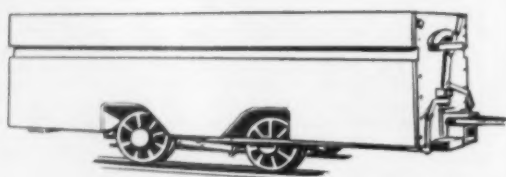
End Dump Turntable Type I



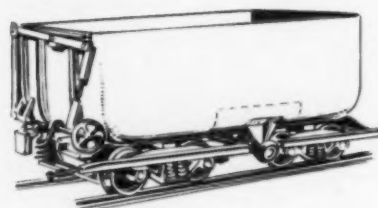
All-steel Rotary Dump Car



All-steel Rotary Dump Car



Large Capacity Granby Car with Mechanical Brakes

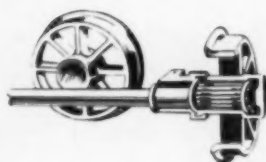


Coal Mine Cars  
Ore and Industrial Cars  
Mine Car Wheels & Trucks  
Sheaves—Rope, Knuckle, Curve  
Track Rope Rollers, Slope  
Rollers  
Carrying Sheaves, Swivels,  
Hitchings  
Loading Beams, Landing Chairs  
Automatic and Plain Cages  
Skips and Dumps  
Revolving Screens  
Perforated Screen Plates  
Truckloaders  
Track Turnouts  
Frogs, Crossovers, Guard Rails  
Split Switches  
Switch Stands  
Track Turntables  
Rail Sections and Parts

Bicycle Spoke Sheaves



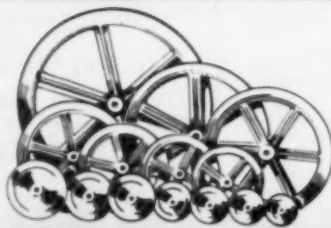
Card Roller Bearing Truck



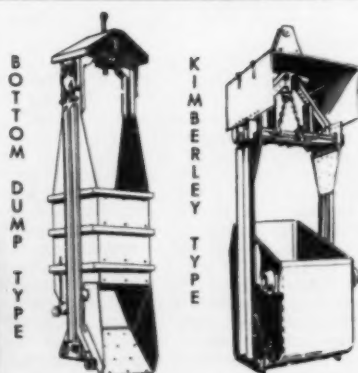
Card Timken Bearing Truck



Standard Rope Sheaves, Heavy Pattern



Card Automatic Skips



Be your production large or small, Card can fit your needs—economically. Our engineers are available for consultation on your haulage problem. No obligation.

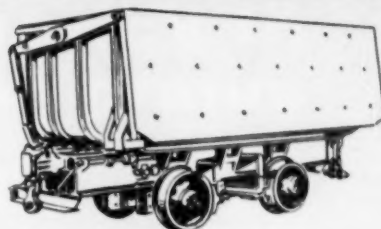
# HAULAGE Pick a winning

bodies and repair parts...Card prices are lower even after freight costs are added.

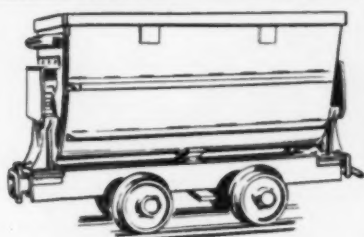
Note the partial list of customers below. Some are now replacing original orders after 10-20 years...with Cards, of course.



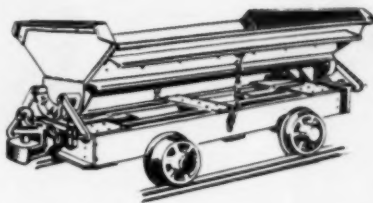
A Popular Granby-Type Car



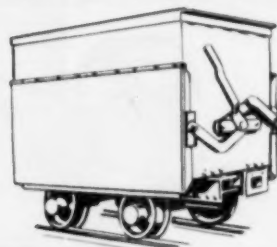
Rocker Dump Car



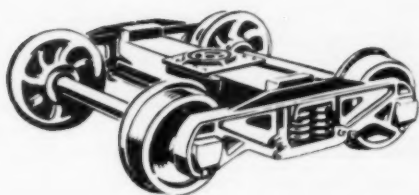
Rocker Dump Car, extra low



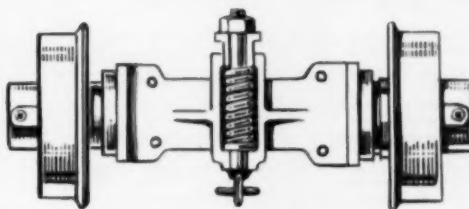
Gable Bottom Type Car



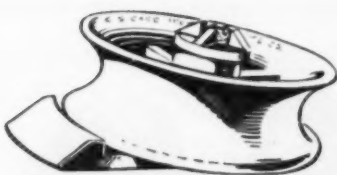
Spring Mounted Belster Truck



Patented Spring Drawbar Truck



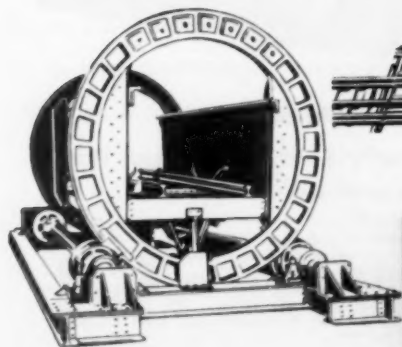
Card Curve Sheave



Roller Bearing Track Rope Roller



Card Power Driven Rotary Dump



Example of Card Track Equipment



CLIMAX MOLYBDENUM  
INTERNATIONAL MINERALS  
PHELPS DODGE  
KENNECOTT COPPER  
U. S. VANADIUM  
U. S. POTASH  
VERMONT COPPER  
HOWE SOUND  
CALERA MINING  
HOMESTAKE  
TELLURIDE MINES  
IDARADO  
CANANEA CONSOLIDATED  
COPPER CO.  
ANACONDA  
VICTOR CHEMICAL WORKS  
CLEVELAND CLIFFS IRON  
POTASH CO. OF AMERICA  
CONSOLIDATED MINING  
& SMELTING CO. OF CANADA  
AMERICAN SMELT. & REF.  
UNITED STATES SMELT. REF.  
& MINING  
UNION PACIFIC COAL  
GENEVA COAL CO.  
COLO. FUEL & IRON CORP.  
INDEPENDENT COAL & COKE  
COLO. & UTAH COAL  
TUNGSTEN MINING  
NEW JERSEY ZINC

**C.S. Card Iron Works Co.**  
2501 West 16th Ave.  
Denver, Colorado

# MORRIS MACHINE WORKS

BALDWINVILLE, N.Y.

Builders of Centrifugal Pumps and Hydraulic Dredges Since 1864

Atlanta, Ga.  
Baltimore, Md.  
Boston, Mass.  
Buffalo, N. Y.  
Charlotte, N. C.  
Chicago, Ill.

Cincinnati, O.  
Cleveland, O.  
Denver, Colo.  
Detroit, Mich.  
Houston, Texas  
Johnstown, Pa.

Kansas City, Mo.  
Los Angeles, Calif.  
Mulberry, Fla.  
New Orleans, La.  
New York, N. Y.  
Omaha, Neb.

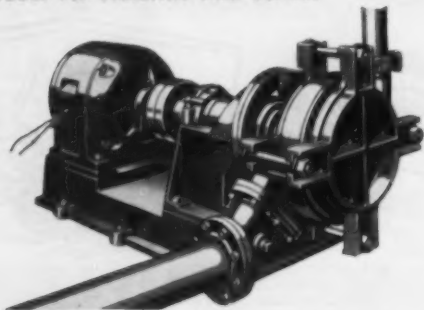
Philadelphia, Pa.  
Pittsburgh, Pa.  
Portland, Ore.  
Richmond, Va.  
St. Paul, Minn.  
Salt Lake City, Utah

San Francisco, Calif.  
Scranton, Pa.  
Seattle, Wash.  
Syracuse, N. Y.  
Tray, N. Y.

Canada: Storey Pump & Equipment Co., Toronto; F. H. Hopkins Co., Montreal; A. B. Wing, Vancouver, B.C.

Expert Office: 50 Church St., New York 7, N.Y.

## • Ideal for Flotation Mill Service

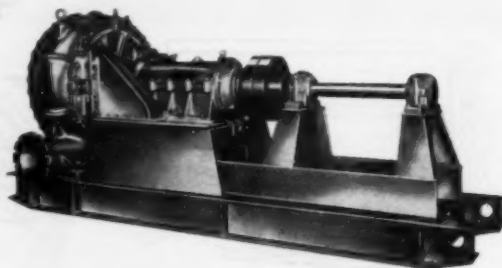


### MORRIS type "R" SLURRY PUMP

... for continuous 24-hour pumping of Ore Slurries, Tailings, Concentrates, Abrasive Mixtures

- **Simple design.** No internal studs or bolts—no troublesome internal joints and fits.
- **Easily dismantled.** Impeller and shaft sleeve reached simply by removing 4 external bolts.
- **Abrasive resistant.** Casing furnished in large variety of wear-resistant materials.
- **Large hydraulic passages.** Permit low velocities, minimizing wear and frequency of renewals.
- **Drive-side suction.** Stuffing box troubles practically eliminated under conditions of high suction pressure, high vacuum or high suction lift.

Widely used in both metallic and non-metallic mines and mills. Sizes 2" to 8". Write for Bulletin No. 181.



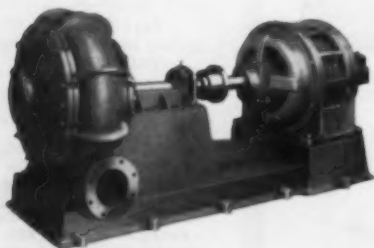
### MORRIS types "GA" and "GAF" HEAVY DUTY DREDGE PUMPS

Small high speed or large low speed units for pumping abrasives against high heads

- **Giant shaft.** of high-grade steel withstands vibration, handles shock loads easily.
- **Suction opening** is larger than discharge for handling higher percentage of solids at greater depths without excessive vacuum on suction.
- **Over-size antifriction bearing assembly.**
- **Economical impeller design.** With external cleaning vanes on both sides. Enlarged suction shroud seals on nose.
- **Heavy volute casing** with extra heavy sections at points of maximum wear. Discs covered with heavy renewable liners . . . openings are of same size for right or left hand assembly

Wearing parts furnished in special alloys. Sizes: 6" to 36". Send for Bulletin No. 184.

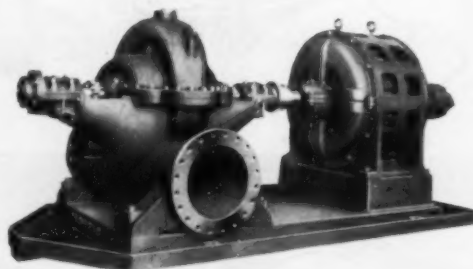
MORRIS



### MORRIS type "M" Material Handling Pump

The Standard Pump in Many Mines for Coal Cleaning

- **Low speed, wide clearance** for continuous low-wear non-clog solids pumping at lower cost.
- **With heads of 120' or less,** will handle solids ranging from fine abrasives to pieces of 11" diameter.
- **Most important wearing parts** receive least wear, are subdivided for easy replacement of parts where greatest erosion occurs.
- **High mechanical and hydraulic efficiencies** are maintained throughout longer service period.



### MORRIS Double-Suction Horizontally-Split Centrifugal Pump

For Drainage and General Service

- **Floating Sealing Rings** adjust concentrically to impeller speeds.
- **Extra-heavy shaft** of tough, hard alloy steel.
- **Upper part** of horizontally-split casing easily removed without disturbing suction or discharge piping.
- **Heavy-duty, precision ball bearings** mounted in dust- and moisture-proof housings.

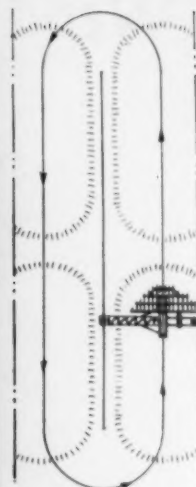
May be connected in series for higher heads. Sizes: 2" to 220". Send for Bulletin No. 179.



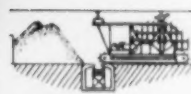
## Key to new efficiency in charge preparation plants



**BUNKER HILL RECLAIMER**



PLAN OF BEDDING PLANT



ELEVATION

**ONE MACHINE** serves any number of tandem bedded piles in two parallel rows separated by a sub-level conveyor. Piles 30' wide may be any length. In a typical four pile arrangement, one pile is accumulating, one being assayed, one receiving final corrections, and the fourth is being reclaimed.

Achieves complete uniformity of prepared charge. Permits capacity operation in subsequent processing. Is fully automatic. First cost is low. Operating and maintenance costs are minimum.

*Write for data and price*

# Stearns-Roger

THE STEARNS-ROGER MFG. CO. DENVER, COLORADO

### HOW WILL IT MEET YOUR CONDITIONS?

Study this example: At the Bunker Hill & Sullivan Mining & Concentrating Company's custom lead smelter at Kellogg, Idaho—this Bunker Hill Reclaimer, built by Stearns-Roger, handles bedded piles of minus  $\frac{1}{4}$ " material of 110-125 lbs. per cu. ft. with 2% to 10% moisture content. Under those conditions, rated capacity is 150 tons per hour. Machine has operated over varying periods at 175-200 tons per hour. Data accumulated during 15 months of operation are highly satisfactory.

DENVER  
SALT LAKE CITY  
HOUSTON  
EL PASO

STEARNS-ROGER ENGINEERING COMPANY, LTD.  
CALGARY, CANADA

# Kleenslot

## WEDGE WIRE PREPARATION SCREENS



mining



foods



chemicals



abrasives



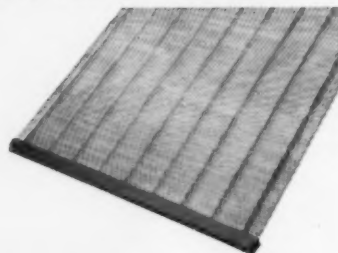
oil

**FOR DEWATERING, SCREENING, WASHING,  
EXTRACTING, FILTERING or SIZING APPLICATIONS**



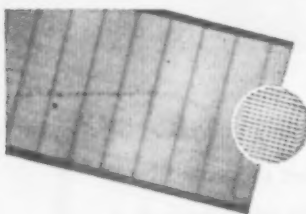
### SCREEN GUARDS

A new innovation in the mining and industrial field. Particularly adaptable for use in flumes. The screen guard is built right into the screen and the vertical guard bars keep the larger lumps of material above the guard bars, permitting only the finer particles to pass over the screen. Special sizes can be furnished.



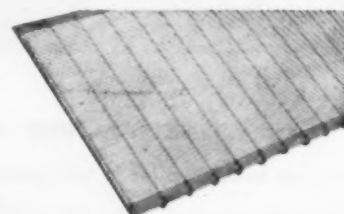
### VIBRATOR SCREENS

They can be designed and adapted to fit any make of vibrator. You do not have to change your present machine to accommodate this screen. It is of quality construction and built to give maximum service. The rigid construction and method of installation prevents "whipping".



### MARCEL-TYPE SCREENS

This screen is entirely different inasmuch as it is of a Marcel-type construction. It was designed for operations where slivers passing through are objectionable in the end product. This screen can be made in all sizes and shapes wherever applicable to higher and productive efficiencies. It gives long life and non-blinding operation.



### ALUMINUM SCREENS

This aluminum screen has all of the attractive and sturdy features of many other metals. In addition, it offers flexing action that adds capacity and dewatering abilities which are almost unbelievable. No changes are necessary in the body of the screen to effect its installation.

**NON-BLINDING — NON-CLOGGING — LONGER LIFE — MOST ECONOMICAL**

The diagram at left shows all of the efficiency that can be furnished to you by KLEENSLOT Wedge Wire Preparation Screens, inasmuch as the wedge construction permits easy clearing. KLEENSLOT Wedge Wire Screens can be furnished in practically any type of metal. It costs nothing to obtain a Wedge Wire recommendation free of charge. Complete literature is available for the mining, oil, food, chemical and abrasives industry. There is a KLEENSLOT Wedge Wire Screen for every application.



## WEDGE-WIRE CORPORATION

GAS STREET AND NICKEL PLATE R. R.  
WELLINGTON, OHIO

# MERRICK SCALE MFG. COMPANY

179 Summer Street, Passaic, New Jersey

## Specialists in Automatic Weighing Equipment

The products of Merrick Scale Mfg. Company, although essentially weighing devices, are designed to function in a much broader capacity in many difficult controlling operations peculiar to the Process Industries.

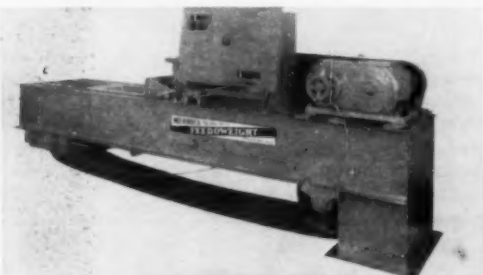
We have had over 40 years' experience in building equipment to solve such production problems as the weighing of materials in transit, automatic proportioning and batching of materials, weighing of liquids, and accurate totalizing and recording of continuously conveyed

material without interruption of process.

The Weightometer, Feedweight, and other Merrick weighing devices are carefully engineered for many other useful applications throughout the Industry than can be described on these pages. For complete data on these important items of production equipment, briefly outline your problem and mail it to the above address. Full information and covering literature will be sent to you without obligation.

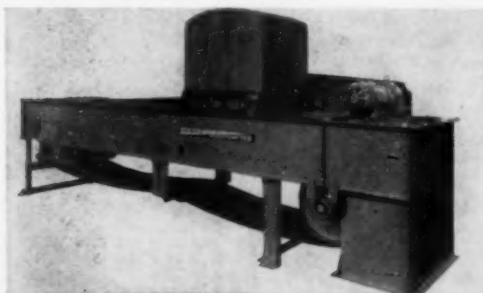
The Merrick WEIGHTOMETER is a self contained integrating and totalizing conveyor scale for use with an existing belt conveyor of any width and capacity. It combines the principles of a platform scale and mechanical integrator. By utilizing a portion of the Conveyor Belt as the Weighing Platform and mechanically multiplying the weight on the belt by the belt speed through a mechanical integrator, a totalized weight is automatically obtainable in tons, pounds, barrels or other unit of measure per hour on a Master Totalizing Counter.

Any material that can be conveyor handled can be accurately weighed by a Weightometer. Such materials as coal, ore, sand, gravel, fish, fish products, minerals of all kinds, cement, fertilizer, filter cake, wood chips, sludge, etc., are common to the Weightometer. Weighing is accomplished without expense or interruption to conveyor flow. Neither are the services of a Weighman required. Easily installed, simple in operation, durable, automatic and accurate. All working parts are enclosed.

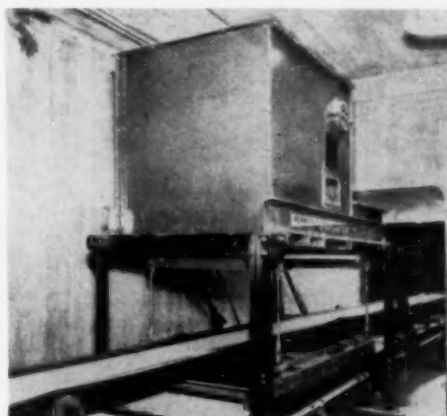


**FEEDOWEIGHT\***

The WSS WEIGHTOMETER is offered for use where a conventional belt conveyor is not available for installation of a standard WEIGHTOMETER. The WSS is supplied complete with its own short belt conveyor, carefully and rigidly constructed to provide good weighing conditions; with motor drive and short supports for easy installation at customer's plant. Usually built with flat belt with moulded flanges along both edges with continuous skirts to prevent side spill of material off the belt during travel and weighing.



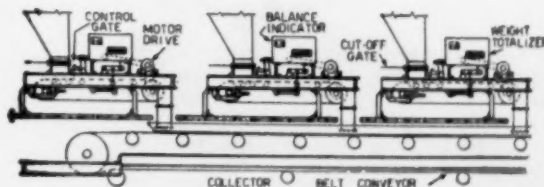
**WSS WEIGHTOMETER**



**WEIGHTOMETER\***

The FEEDOWEIGHT is a dual-purpose machine which correctly and uniformly feeds material by weight and, in addition, automatically totalizes the weight of all materials so fed.

The FEEDOWEIGHT delivers accurate amounts of material according to a predetermined setting, the control being accomplished by means of an automatic gate regulated by a special Powered Feed Regulator rather than by direct connection to scale beam. The scale beam is left free to respond instantaneously to any and all changes of load as it is completely independent of the proportioning mechanism.



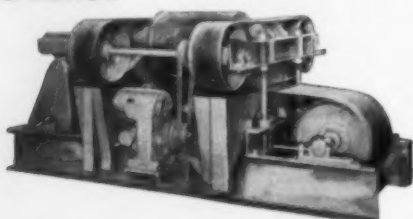
The drawing above illustrates an application of three FEEDOWEIGHT units used in a battery arrangement for a proportioning operation. Each unit accurately weighs its own material, automatically controls the rate of feed, and continuously totalizes its weight. Should any hopper become empty, all units in the battery automatically shut down.

\* Reg. U.S. Pat. Off.

# MAGNETIC EQUIPMENT

*tailored to the  
Mining Industry*

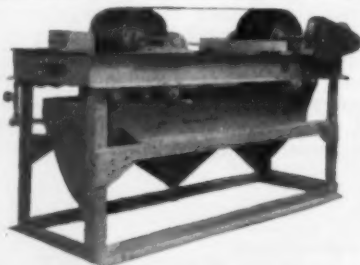
**CROSS-BELT  
SEPARATOR**



Equipped with exclusive, patented variable pitch lower pole, the Stearns Type R cross-belt separator provides amazing control in separating weakly magnetic ores in both placer and hard rock deposits — magnetite, wolframite, heubnerite, feberite, columbite, tantalite and ilmenite.

With variable lower pole, you can obtain as many as one non-magnetic and ten magnetic products from two magnets. Ordinary units require five magnets and double the cost. Bulletin 86

**MWI  
HEAVY-MEDIA  
MAGNETIC  
SEPARATOR**



Developed specifically for the recovery of magnetic media in the heavy-media process, the Stearns MWI separator requires a minimum of adjustments . . . efficiently maintains recoveries as high as 99.9 percent under varying load and capacity conditions . . . provides efficient magnetite or ferrosilicon media recovery in plants handling ores such as iron, fluorspar, coal, zinc, lead, etc. Bulletin 82

1086

STEARNS Magnetic, Inc., builds a complete line of magnetic separation equipment to meet the specific requirements of both metallic and non-metallic mining operations. Equipment includes electro-magnetic pulleys, heavy media separators, cross-belt separators and suspended separation magnets.

Stearns' experienced engineers work directly with you in designing and installing magnetic equipment that is engineered to fit your individual operating needs exactly.

In addition, the company maintains a fully-equipped laboratory for thoroughly analyzing and testing ore samples. Requests for analysis or information receive immediate attention. We welcome your inquiry.

**ELECTRIC-MAGNETIC  
PULLEY**



Powerful Stearns electro-magnetic pulley effectively removes tramp iron from fast-flowing, heavily-loaded conveyor lines. Solidly built, thoroughly insulated and protected. Special, new thin-coat drum lagging increases tractive effort without affecting magnetic pull. Sizes range from 12-inch diameter units to world's largest, Bulletin 803-C

**SUSPENDED  
SEPARATION MAGNET**



Provides a tremendous pulling force that reaches far down into material on conveyor lines — prevents escape of deeply embedded tramp iron. Coil-wound for continuous duty. Special insulation and rib-type head casting assures fast heat dissipation. 16-inch to 65-inch diameter size range. Round or rectangular construction. Bulletin 25-D

MAGNETIC EQUIPMENT FOR ALL INDUSTRY

**STEARNS**

STEARNS MAGNETIC, INC.



**MAGNETS**

685 S. 28th St., Milwaukee 46, Wis.



## 1954 MINING WORLD-WORLD MINING

# Catalog Index of Equipment and Manufacturers

The CATALOG INDEX is comprised of two sections:

SECTION I is an alphabetical listing of the specialized products and equipment used by the MINE-MILL-SMELTER industry. All principal manufacturers of these products and equipment are listed for your convenience.

SECTION II is an alphabetical list of all principal manufacturers and their addresses.

The names of manufacturers who are represented in

this issue by catalogs or advertisements are printed in **BOLDFACE** type in Sections I and II. The page numbers of their catalogs or advertisements are also given for easy reference.

Every effort has been made to make your MINING WORLD-WORLD MINING CATALOG ISSUE, Development and Directory Number as complete and accurate as possible. MINING WORLD, however, cannot be responsible for changes in names, addresses, and other discrepancies.

## SECTION I

## Equipment Index

SECTION I contains an alphabetical list of product and equipment names. Wherever feasible, equipment has been indexed under headings representing the nomenclature preferred by the industry; or in many cases under the principal proper noun. For example,

"Flotation Machines" are indexed as such rather than under the all-encompassing heading "Machines." Rock Drills, however, have been most logically listed as "Drills, Rock."

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Mfg. Co.  
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Bin-Dicator Co., The  
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Bodinson Mfg. Co.  
Carrier Conveyor Corp.  
Cleveland Vibrator Co., The  
Convair, Inc.

**DENVER EQUIPMENT CO., CAT-**  
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facturing Co., The  
Lippman Engineering Works  
Martin Engineering Co.

Rotary Silent—see Martin Engi-  
neering Co.  
Saracco—see Saracco Tank & Weld-  
ing Co.

Saracco Tank & Welding Co.  
**SYNTRON CO., CATALOGED ON**  
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**TY-SPEED—SEE TYLER CO., THE**  
**W. S.**  
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Vibrator—see Martin Engr. Co.  
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**AUGER BITS**

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Bowditch Co., The  
Cardox Co.

Central Mine Equipment Co.  
Chattanooga Machine Co.  
Coalmaster—see Central Mine  
Equipment Co.

Common, Inc.  
Controller Block & Supply Co.  
Failing Co., Geo. C.  
Firth Sterling Inc.

**GARDNER-DENVER CO., CATA-**  
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General Electric Co., Carboly Dept.

**JOY MANUFACTURING CO.,**  
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Kennametal—see Kennametal Inc.  
Kennametal Inc.  
Kerfmaster—see Central Mine  
Equipment Co.

Lectonia—see Lectonia Tool Co.,  
The  
Lectonia Tool Co., The  
Manitoba Steel Foundries Ltd.

McLaughlin Mfg. Co.  
Mobile Drilling Inc.

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Pennsylvania Drilling Co.  
**SALEM—SEE SALEM TOOL CO.,**  
**THE**

**SALEM TOOL CO., THE, CATA-**  
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Schroeder Bros.

**THOR POWER TOOL CO., CAT-**  
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Vasecoloy-Ramet Corp.

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Acme—see Stardrill-Keystone Co.  
Acme Fishing Tool Co.  
Bucyrus-Erie Co.

General Electric Co., Carboly Dept.  
Longyear Co., E. J.  
Mill Iron Works, Inc.  
Mobile Drilling, Inc.

Mott Core Drilling Co.  
Sanderson Cyclone Drill Co.  
Spang & Co.  
Stardrill-Keystone Co.

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Drill Co.

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**ACKER DRILL CO., INC., CAT-**  
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**ASCOLITE—SEE SMIT & CO.,**  
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**BOYLES BROS. DRILLING CO.,**  
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Christensen Diamond Products Co.  
Continental Drilling Co.  
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Diamond Prod., Inc.

Diamond Tool Research Co., Inc.  
Failing Co., Geo. C.  
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**IMPREGNALITE—SEE SMIT &**  
**CO., INC., ANTON**

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Metal Carbides Corp.  
Mobile Drilling Inc.  
Mott Core Drilling Co.  
**NICOLITE—SEE SMIT & CO.,**  
**INC., ANTON**

Pennsylvania Drilling Co.  
**PERABET—SEE BOYLES BROS.**  
**DRILLING CO., LTD.**

**ROSSET—SEE PRAGUE & HEN-**  
**WOOD, INC.**  
Shark Tooth—see American Coldset  
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**SMIT & CO., INC., ANTON, CAT-**  
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**SPRAGUE & HENWOOD, INC.,**  
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**TUPSET—SEE SPRAGUE & HEN-**  
**WOOD, INC.**

**TRUCAST—SEE SPRAGUE &**  
**HENWOOD, INC.**  
Truco—see Wheel Truening Tool Co.  
Wheel Truening Tool Co.

**PERCUSSION BITS**

Acme Fishing Tool Co.  
**ATLAS—SEE ATLAS, A. B., CATA-**  
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Brunner & Lay, Inc.  
**CLEVELAND ROCK DRILL DIV.,**  
**WESTINGHOUSE AIR BRAKE**  
**CO., CATALOGED ON PAGE 4**

**COPCO PACIFIC LTD., CATA-**  
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**GARDNER-DENVER CO., CATA-**  
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Holman Bros. Ltd.  
Holman Brothers (Canada) Ltd.  
**INGERSOLL-RAND CO., CATA-**  
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Junction Bit & Tool Co.  
Kennametal—see Kennametal Inc.

Kennametal Inc.  
Manchester Bit Corp.  
Marathon Coal Bit Co.

Minerals Engineering Co.  
Mobile Drilling Inc.  
Rawplug Co., Inc., The  
Rock Bits—see Brunner & Lay Inc.

**STARDRILL-KEYSTONE CO., CAT-**  
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Throwaway Bit Corp.  
**TIMKEN—SEE TIMKEN ROLLER**  
**BEARING CO.**  
**TIMKEN ROLLER BEARING CO.,**  
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Vasecoloy—Ramet Corp.  
**WESTERN ROCK BIT MANU-**  
**FACTURING CO., CATALOG-**  
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Metals  
Blue Demon—see Hawthorne, Inc.  
Central Mine Equipment Co.

Coalmaster—see Central Mine  
Equipment Co.  
Failing Co., Geo.  
Firth Sterling Inc.

Firthite—see Firth Sterling, Inc.  
Gemco Tru-Blu—see Gibraltar  
Equipment & Mfg. Co.

General Electric Co., Carboly Dept.  
Gibraltar Equipment & Mfg. Co.  
**HAWTHORNE, INC., HERB J.,**  
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Industrial Overlay Metals  
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Rawplug Co., Inc.  
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Vasecoloy-Ramet Corp.  
Westinghouse Air Brake Co., Ls  
RoI Div.

Winter Weiss Co., The

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Atlas Powder Co.  
Davia Instrument Mfg. Co.  
**DU PONT DE NEMOURS & CO.,**  
**E. I., EXPLOSIVES DIV.,**  
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Hercules Powder Co.  
Shot Master—see Atlas Powder Co.  
Trojan Powder Co.

**DENOTATING FUSES**

Canadian Safety Fuse Co., Ltd.  
**DU PONT DE NEMOURS & CO.,**  
**E. I., EXPLOSIVES DIV.,**  
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Hercules Powder Co.  
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Trojan Powder Co.

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American Cyanamid Co., Explo-  
sive Dept.  
Atlas Powder Co.

**DU PONT DE NEMOURS & CO.,**  
**INC., E. I., EXPLOSIVES**  
**DIV., CATALOGED ON PAGE**  
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Hercules Powder Co.  
Rockmaster—see Atlas Powder Co.  
Trojan Powder Co.

**EXPLOSIVES**

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Apache Powder Co.  
Atlas-Giant—see Atlas Powder Co.  
Atlas Powder Co.

**DU PONT DE NEMOURS & CO.,**  
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Hammond Co., J. V.  
Hercules Powder Co.  
Illinois Powder Mfg. Co.  
National Powder Co.

Olin Industries, Inc., Explosives  
Div.  
Trojan Powder Co.

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**pages of this yellow section.**



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Canadian Safety Fuse Co., Ltd.  
COAST MFG. & SUPPLY CO.  
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Hercules Powder Co.  
National Fuse & Powder Co.  
Trojan Powder Co.

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Americas Cyanamid Co., Explosive Dept.  
Atlas Powder Co.  
Bowman-Durham-Robbins, Inc.  
Burgess Battery Co.  
Canadian Safety Fuse Co., Ltd.  
Central Mines Supply Co.  
COAST MFG. & SUPPLY CO.  
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Davis Instrument Mfg. Co., Inc.  
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Economy Fuse & Mfg. Co.  
Ensign-Bickford Co.  
Fulmer Bag & Cotton Mills, Inc.  
Gray Instrument Co.  
Hammond Co., J. V.  
Hercules Powder Co.  
Johnson Loading Supplies, G. R.  
Lock-Hook—see Johnson Loading Supplies, G. R.  
Lowell Insulated Wire Division  
MINE SAFETY APPLIANCES CO., CATALOGED ON PAGE 247  
Minnesota Mining & Mfg. Co., Irvington Varnish & Insulator  
National Fuse & Powder Co.  
National Mine Service Co.  
National Powder Co.  
Olin Industries, Inc., Explosive Dept.  
Permi-Seal—see National Mine Service Co.  
Primacord—see Ensign-Bickford Co.  
Quick-Seal—see National Mine Service Co.  
Tamping Bag Co., The  
Thermite—see Canadian Safety Fuse Co. Ltd.  
Trojan Powder Co.  
UNITED STATES STEEL EXPORT CO., CATALOGED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
Westinghouse Electric Corp.

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ALL-CHALMERS MFG. CO., GEN. MACHY, DIV., CATALOGED ON PAGE 233-236  
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American Hoist & Derrick Co.  
American Pulley Co.  
AMSCO—SEE AMERICAN BRAKE SHOE CO.  
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Bedinson Mfg. Co.  
Boston & Lockport Block Co., Inc.  
Browning Mfg. Co.  
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Connellville Mfg. & Mine Supply Co.  
Crosby Load Rated—see Amer. Hoist & Derrick  
Dobbie Foundry & Machine Co.  
Dodge Manufacturing Corp.  
Durrill—see Severman Bros., Inc.  
Hewitt-Robins Inc.  
Hockensmith Corp., The  
Holmes & Bros., Inc., Robert  
JEFFREY MANUFACTURING CO., THE, CATALOGED ON PAGE 19  
Johnson Block Co.  
Jones Foundry & Machine Co., W. A. JOY MANUFACTURING CO., CATALOGED ON PAGE 249, 261  
Kenney Co., Paul E.  
LAKE SHORE ENGR. CO., CATALOGED ON PAGE 31  
Madison Tackle Block Co.  
McKinstry Prod. Corp.  
Ohio Hoist & Mfg. Co.  
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Page Engr. Co.  
Paulson-Webber Cordage Corp.  
RIBLET TRAMWAY CO., CATALOGED ON PAGE 123  
Roberts & Schneider Co.  
Round & Sons, Inc., David  
Sanford-Day Iron Works, Inc.  
SAUERMAN BROS., INC., CATALOGED ON PAGE 116  
SKF Industries, Inc.  
Skookum Co.

Taylor-Wharton Iron & Steel Co.  
Telluride Iron Wks.  
Tool Steel Gear & Pinion Co., The  
Upson-Walton Co., Inc.  
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Valcan Iron Works, Pa.  
Washington Iron Wks.  
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Bethlehem Pacific Coast Steel Corp.  
Bethlehem Steel Co.  
Bethlehem Steel Export Corp.  
CF&I—SEE COLORADO FUEL & IRON CORP., THE, CATALOGED ON PAGE 249, 241  
Duquesne Mine Supply Co.  
Edson Corp., The  
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Ohio Brass Co.  
Oliver Iron & Steel Corp.  
Pacific Car & Foundry Co.  
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Republic Steel Corp.  
Sheffield Steel Corp.  
Strong, Carlsle & Hammond Co.  
Telluride Iron Wks.  
U. S. Industries Inc.  
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Youngstown Sheet & Tube Co.

## BORTZ

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## BOOM ASSEMBLIES

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### DRUMS AND MECHANISMS

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Heyl & Patterson, Inc.  
Koehring Co.  
Link Belt Speeder Corp.  
Owen Bucket Co.  
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AMERICAN BRAKE SHOE CO., AMER. MANGANESE STEEL DIV., CATALOGED ON PAGE 23  
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Bucyrus-Erie Co.  
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ALLISON STEEL MFG. CO., CATALOGED ON PAGE 85  
Aluminum Co. of America  
Armo Drainage & Metal Products, Inc.  
Bethlehem Pacific Coast Steel Corp.  
Bethlehem Steel Co.  
Blaw-Knox Co., Blaw-Knox Div.  
Butler Mfg. Co.  
COLUMBIAN STEEL TANK CO., CATALOGED ON PAGE 79  
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Klockner-Humboldt-Deuts Ag.  
Lakeland Bridge & Steel Co.  
Luria Engineering Co.  
Maryland Metal Building Co., Inc.  
Republic Steel Corp.  
Steelcraft—see Steelcraft Manufacturing Co., The  
Steelcraft Manufacturing Co., The  
Stefco—see Stefco Mfg. Co.  
Stefco Mfg. Co.  
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U. S. Steel Corp., American Bridge Div.  
UNITED STATES STEEL EXPORT CO., CATALOGED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
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## BURNERS, OIL & GAS

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DPC—see Denver Fire Clay Co., The  
Denver Fire Clay Co., The  
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### See also Rope, Wire; Tramway, Aerial

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Alphaduct Wire & Cable Co.  
Aluminum Co. of America  
American Metal Moulding Co.  
AMERICAN MINE DOOR COMPANY, CATALOGED ON PAGE 294, WM 115 (WORLD MINING ONLY)

Anasconda Copper Mining Co.  
Anasconda Wire & Cable Co.  
Ankoseal—The Ansonia Wire & Cable Company  
Ansonia Wire & Cable Company, The  
Bridgeport Brass Co.  
Bridgeport Fittings, Inc.  
Buckeye—see Youngstown Sheet & Tube Co.  
Canada Wire & Cable Co., Ltd.  
Carson Prod. Corp.  
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Chester Cable Corp.  
Collmer Insulated Wire Co.  
Copperweld Steel Co., Wire & Cable Div.  
Essex Wire Corp.  
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can Bridge Div.U. S. Steel Corp., Columbia Geneva  
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Wilkes-Barre Iron Mfg. Co.

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Taylor-Wharton Iron & Steel Co.Transue-Williams  
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Motor Generator Corp.Multi-Matic Corp.  
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### CLUTCHES

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Davis Inst. Mfg. Co.  
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Faraday—Spartan Faraday, Inc.  
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United States Instrument Corp.

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Sawyer Bailey Corp.  
Schramm Inc.  
Smith & Co., Gordon  
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Roots-Connorsville Blower Corp.  
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Columbus Conveyor Co.

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Hapman Conveyors, Inc.

Helmic Foundry-Machine Co.

Hewitt-Robins, Inc.

Holmes & Bros., Inc., Robert

Iowa Manufacturing Co.

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Columbus Conveyor Co.

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Conveyor Co., The

Diamond Iron Works Co.

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Edwards Manufacturing Corp.

Gates Rubber Co.

Gruendler Crusher & Pulverizer Co.

Hewitt-Robins, Inc.

Hirsch Bros. Machinery Co.

Holly Pneumatic Systems, Inc.

Holmes & Bros., Inc., Robert

Iowa Manufacturing Co.

Irwin Foundry & Mine Car Co.

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Kennedy-Van Saun Mfg. & Eng. Corp.

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Bonded—see Bonded Scale & Machine Co.

Bonded Scale & Machine Co.

Chain Belt Co.

Chain Belt Co., Shafer Bearing Div.

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Christian Engineers, J. D.

Columbus Conveyor Co.

Continental Gin Co., Industrial Div.

Continental Rubber Wks.

Conveyor Co., The

Diamond Iron Works Co.

Dick Co., Inc. R. & J.

Fraser & Chalmers Engr. Wks.

Gates Rubber Co.

Goodyear Tire & Rubber Co.

Gruendler Crusher & Pulverizer Co.

Hewitt-Robins, Inc.

Hewitt-Robins, Inc., Robins Conveyors Div.

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Caldwell Co., W. E.

Chain Belt Co.

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Christian Engineers, J. D.

Connellville Mfg. & Mine Supply Co.

Continental Gin Co.

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Hamilton Rubber Mfg. Corp.

Hewitt-Robins, Inc.

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Indestructible, New York Bel-  
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Pioneer Engineering Works, Inc.  
Pioneer Rubber Mills  
Porter Co., Inc., H. K. Quaker  
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Rahmann & Co., Inc., Geo.  
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Air Plac. Mix-Elevator—see Air  
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Chain Belt Co.  
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**PACIFIC FOUNDRY CO., LTD.,**  
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San Joaquin & Tower Co.  
Windeler Co., Ltd., Geo.

## CORE BARRELS

Christensen Diamond Prod. Co.  
Diamond Drill Contracting Co.  
Mayhew Supply Co., Inc.  
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Snap Tite, Inc.  
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(Pa.)  
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Tiedler, Inc.  
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Christiana Mach. Co.  
Cullman Wheel Co.  
Diamond Chain Co., Inc.  
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F.A.B. Manufacturing Co.  
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Poole Foundry & Mach. Co.  
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Smith Power Transmission Co., The  
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Alliance Mach. Co.  
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Cleveland Crane & Engr. Co.  
Conco Engr. Wks., Conkey & Co.,  
Div.  
Crane Hoist Engr. Corp.  
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Eric Strayer Co.  
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Lang Co.  
Manitowoc Engr. Co.  
Maris Crane & Hoist Co.  
Northern Eng. Wks.  
Pacific Coast Engr. Co.  
Reading Crane & Hoist Corp.  
Robbins & Myers, Inc.  
Round & Son, Inc., David  
Sheppard Niles Crane & Hoist Corp.  
THUNES MEK. VERKSTED, A. S.,  
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United States Steel Corp., Ameri-  
can Bridge Div.  
UNIVERSAL DREDGE MFG. CO.,  
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96 (WORLD MINING ONLY)  
Whiting Corp.  
Woodridge Mfg. Co.

JIB  
American Chain & Cable Co.,  
Wright Hoist Div.  
Alliance Mach. Co.  
Bodinson Mfg. Co.  
Cleveland Crane & Engr. Co.  
Clyde Iron Wks., Inc.  
Conco Engr. Wks., Conkey & Co.,  
Div.  
Crane Hoist Engr. Corp.  
Forker Corp., The  
Hanson Clutch & Mach. Co.  
HARNISCHFEGER CORP., CATA-  
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Robbins & Myers, Inc.  
Sheppard Niles Crane & Hoist Corp.  
Silent Hoist & Crane Co.  
THUNES MEK. VERKSTED, A. S.,  
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Whiting Corp.  
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American—see American Hoist &  
Derrick Co.  
American Hoist & Derrick  
American Steel Dredge Co.  
BALDWIN - LIMA - HAMILTON  
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Bay City Shovels, Inc.  
Bucyrus Erie Co.  
Clark Equip. Co., Construction  
Mach. Div.  
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Forker Corp., The  
Garwood Industries, Inc.  
Hanson Clutch & Mach. Co.  
HARNISCHFEGER CORP., CATA-  
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HYSTER CO., CATALOGED ON  
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Insley Mfg. Co.  
INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGED  
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SEE INTERNATIONAL HAR-  
VESTER EXPORT CO.  
Kochring Southern Co.  
LIMA—SEE BALDWIN-LIMA-  
HAMILTON CORP.  
MARION POWER SHOVEL CO.,  
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NORTHWEST ENG. CO., CATA-  
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Ohio Hoist & Mfg. Co.  
Osgood-General  
Pettibone Mulliken Corp.  
Power Equip. Co.  
Quick Way Truck Shovel Co.  
Shield Bantam Co.  
Silent Hoist—see Silent Hoist &  
Crane Co.  
Silent Hoist & Crane Co.  
Stimmel Winch Co., Inc.  
Thew Shovel Co.  
Truck Engr. Corp.  
Unit Crane & Shovel Corp.  
Washington Iron Wks.  
Waynes—see American Steel Dredge  
Co., Inc.

## CRUSHERS

See also Laboratory Equipment  
and Supplies

## CONE

ALLIS-CHALMERS MFG. CO.,  
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AMERICAN BRAKE SHOE CO.,  
AMERICAN MANGANESE  
STEEL DIV., CATALOGED  
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AMSCO—SEE AMERICAN BRAKE  
SHOE CO.  
Bath Iron Wks. Corp.  
Fraser & Chalmers  
HYDROCONE—SEE ALLIS-CHAL-  
MERS MFG. CO.  
Klockner-Humboldt-Deutz A. G.  
MINE & SMELTER SUPPLY CO.,  
THE MARCY MILL DIV.,  
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NORDBERG MANUFACTURING  
CO., CATALOGED ON PAGE  
8  
Smith Engineering Works

SYMONS—SEE NORDBERG MAN-  
UFACTURING CO.

## GYRATORY

ALLIS-CHALMERS MFG. CO.,  
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AMERICAN MANGANESE  
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SHOE CO.  
Bath Iron Wks. Corp.  
Bradley Pulverizer Co.  
Kennedy-Van-Saun Mfg. & Eng.  
Corp.  
Klockner-Humboldt-Deutz A. G.  
Lippmann Engineering Works  
MINE & SMELTER SUPPLY CO.,  
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Smith Engineering Works  
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MERS MFG. CO.  
SYMONS—SEE NORDBERG MAN-  
UFACTURING CO.  
TRAYLOR ENGINEERING &  
MFG. CO., CATALOGED ON  
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## HAMMER AND IMPACT

ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
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AMERICAN MANGANESE  
STEEL DIV., CATALOGED  
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American Pulverizer Co.  
AMSCO—SEE AMERICAN BRAKE  
SHOE CO.  
Athey Prod. Corp.  
Bath Iron Wks.  
Combustion Engineering, Inc.  
Diamond Iron Works Co.  
Fraser & Chalmers  
Gruendler Crusher & Pulverizer Co.  
Holmes & Bros., Inc., Robert  
Iowa Manufacturing Co.  
JEFFREY MANUFACTURING CO.,  
THE, CATALOGED ON PAGE  
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Kennedy-Van-Saun Mfg. & Eng.  
Corp.  
Klockner-Humboldt-Deutz A. G.  
Lippmann Engineering Works  
MUDHOG—SEE JEFFREY MAN-  
UFACTURING CO., THE  
MINE & SMELTER SUPPLY CO.,  
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NORDBERG MFG. CO., CATA-  
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PENNSYLVANIA CRUSHER CO.,  
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Pettibone Mulliken Corp.  
PULVERATOR CO.—SEE ALLIS-  
CHALMERS MFG. CO.  
Rogers Iron Works Co.  
Simplicity Engineering Co.  
Sprout, Waldron & Co., Inc.  
STEPHENS-ADAMSON MFG. CO.,  
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STURTEVANT MILL CO., CATA-  
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SYMONS—SEE NORDBERG MFG.  
CO.  
THUNES MEK. VERKSTED, A. S.,  
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Universal Engineering Corp.  
WILLIAMS CRUSHER & PUL-  
VERIZER CO., CATALOGED  
ON PAGE 262

## JAW

A-1—SEE ALLIS CHALMERS  
MFG. CO.  
ALLIS-CHALMERS MFG. CO.,  
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AMERICAN BRAKE SHOE CO.,  
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SHOE CO.

Bacon—see Bacon-Greene & Milroy  
Bacon-Greene & Milroy  
Bacon Pietsch Co., Inc.  
BALDWIN - LIMA - HAMILTON  
CORP., CATALOGED ON  
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Bath Iron Wks. Corp.  
BICO, INC., CATALOGED ON  
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Birdsboro Steel Foundry & Machine  
Co.  
DFC—SEE DENVER FIRE CLAY  
CO., THE  
DENVER EQUIP. CO., CATA-  
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DIAMOND—SEE POWER EQUIP.  
CO.

Diamond Iron Works Co.  
Farrel-Bacon—see Bacon-Greene &  
Milroy  
Farrel-Bacon—see Farrel-Birming-  
ham Co.  
Farrel-Birmingham Co., Inc.  
Fraser & Chalmers  
Gibson, W. W.  
GOODMAN MFG. CO., CATA-  
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Gruendler Crusher & Pulverizer Co.  
Iowa Manufacturing Co.  
JEFFREY MANUFACTURING CO.,  
THE, CATALOGED ON PAGE  
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Kennedy-Van Saun Mfg. & Eng.  
Corp.  
Klockner-Humboldt-Deutz A. G.  
Lippmann Engineering Works  
McLanahan & Stone Corp.  
MINE & SMELTER SUPPLY CO.,  
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Morse Bros. Machinery Co.  
Neal Machinery Co., H. T.  
PACIFIC—SEE ALLOY STEEL &  
METALS CO.  
PENNSYLVANIA CRUSHER CO.,  
CATALOGED ON PAGE 114

Pettibone Mulliken Corp.  
Pioneer Engr. Wks., Inc.  
Power Equip. Co.  
Reliance—see Universal Road Ma-  
chinery Co.  
Rogers Iron Works Co.  
Smith Engineering Works  
Stimmel Winch Co., Inc.  
Straub Mfg. Co., Inc.  
STURTEVANT MILL CO., CATA-  
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(WORLD MINING ONLY)  
TRAYLOR ENGINEERING & MFG.  
CO., CATALOGED ON PAGE  
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Universal Engineering Corp.  
Universal Road Machinery Co.  
Universal Rd. Mach. Co., R. M.  
Gray Div.  
Webb Corp., The

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ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
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AMERICAN BRAKE SHOE CO.,  
AMER. MANGANESE STEEL  
DIV., CATALOGED ON PAGE  
23  
American Car & Foundry Co.  
AMSCO—SEE AMERICAN BRAKE  
SHOE CO.  
Bacon Pietsch Co., Inc.  
Bath Iron Wks. Corp.  
Birdsboro Steel Foundry & Machine  
Co.  
Bonded—see Bonded Scale and Ma-  
chine Co.  
Combustion Engineering—Super-  
heater, Inc., Raymond Pulver-  
izer Div.  
DENVER EQUIPMENT CO., CATA-  
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Denver Fire Clay Co., The  
Diamond Iron Works Co.  
Eagle Iron Wks.  
Exolon—see Exolon Co., The  
Exolon Co., The  
FAIRMONT—SEE ALLIS-CHAL-  
MERS MFG. CO.  
FLEXROLL—SEE JEFFREY  
MANUFACTURING CO., THE  
Fraser & Chalmers  
Gathe Corp.  
GOODMAN MFG. CO., CATA-  
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Gruendler Crusher & Pulverizer Co.  
Gundlach Machine Co., T. J.  
Hoyl & Patterson, Inc.  
Hewitt-Robins, Inc., Robins Con-  
veyors Div.  
Iowa Manufacturing Co.  
JEFFREY MANUFACTURING CO.,  
THE, CATALOGED ON PAGE  
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Kennedy-Van Saun Mfg. & Eng.

Manufacturer's Complete Names and  
Addresses are listed in Section II, last  
pages of this yellow section.

## Crusher Parts

Corp.  
Kenyon Machinery Co.  
Klockner-Humboldt-Deutz A. G.  
LINE-BELT—SEE LINE-BELT CO.  
LINE-BELT CO., CATALOGED ON  
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ING ONLY)  
Lippmann Engineering Works  
McLanahan & Stone Corp.  
McNally Mfg. Co.  
MINE & SMELTER SUPPLY CO.,  
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Neal Machinery Co., H. T.  
PENNSYLVANIA CRUSHER CO.,  
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Pettibone Mulliken Corp.  
Pioneer Engr. Wks., Inc.  
Ridge Equip. Co.  
Rogers Iron Works Co.  
Smith Engineering Works  
STEPHENS-ADAMSON MFG. CO.,  
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TRAYLOR ENGINEERING &  
MFG. CO., CATALOGED ON  
PAGE 213-224  
United Iron Works Co.  
Universal Engineering Corp.  
Vulcan Iron Wks., (Pa.)  
Webb Corp., The  
Webster Mfg., Inc.  
Wilmon Eng. Co.

## CRUSHER PARTS

### OTHER THAN PRIMARY CRUSHER MANUFACTURERS ABOVE JAW AND CHEEK PLATES

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Bath Iron Wks. Corp.  
BICO, INC., CATALOGED ON  
PAGE 256  
Birdsboro Steel Foundry & Mach.  
Co.  
Columbia Steel Casting Co., Inc.  
Diamond Iron Works Co.  
EIMCO CORP., CATALOGED ON  
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ELECTRIC STEEL FOUNDRY CO.,  
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Gatke Corp.  
Iowa Manufacturing Co.  
JEFFREY MANUFACTURING CO.,  
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19  
Kennedy-Van Saun Mfg. & Engr.  
Corp.  
Kensington Steel Co.  
Manitoba Steel Foundries Ltd.  
McLanahan & Stone Corp.  
PACIFIC—SEE ALLOY STEEL &  
METALS CO.  
PENNSYLVANIA CRUSHER CO.,  
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Pettibone Mulliken Corp.  
Smith Engineering Works  
STURTEVANT MILL CO., CATA-  
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(WORLD MINING ONLY)  
Taylor-Wharton Iron & Steel Co.  
TRAYLOR ENGINEERING &  
MFG. CO., CATALOGED ON  
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United Iron Works Co.  
Universal Engineering Corp.  
Washington Iron Wks.  
Webb Corp., The

## CYCLONES

Bird Machine Co.  
CENTRICOLONS—SEE DOHR-  
OLIVER, INC.  
Centrifugal & Mechanical Indus-  
tries, Inc.  
Dagley Mfg. Co.  
DOHR-OLIVER, CATALOGED ON  
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DOHR-OLIVER—SEE DOHR-  
OLIVER, INC.  
Ducon Co.  
Georgia Iron Wks.  
EQUIPMENT ENG., INC., CATA-  
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HARDINGE CO., INC., CATA-  
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Heyl & Patterson, Inc.  
Johnson March Corp.  
Northern Blower Co.  
Pangborn Corp.  
Peterson Filters & Engr. Co.  
Roberts & Schaeffer Co.

STANDARD STEEL CORP., CATA-  
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WILLIAMS CRUSHER & PUL-  
VERIZER CO., CATALOGED  
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## CYLINDERS AND

### ACTUATORS

Blackhawk Mfg. Co.  
Breco Corp., Inc.  
Curtis Pneumatic Machinery  
Dagley Manufacturing Co.  
Galland Henning Mfg. Co., Nopak  
Div.  
Hydraulic Press Mfg. Co.  
LEDEEN MFG. CO., CATALOGED  
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Oilgear Co., The  
Pantex Mfg. Corp.  
Vickers, Inc.  
WESTINGHOUSE AIR BRAKE CO.,  
CLEVELAND ROCK DRILL  
DIV., CATALOGED ON PAGE  
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## DIAMOND DRILLS

### AND EQUIPMENT

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BOYLES BROS. DRILLING CO.,  
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BOYLES BROS. DRILLING CO.,  
LTD., (CANADA) CATA-  
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Continental Drilling Co.  
Diamond Drill Contracting Co.  
JOY MANUFACTURING CO.,  
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Longyear Co., E. J.  
McClintock, R. S.  
Pennsylvania Drilling Co.  
SPRAGUE & HENWOOD, INC.,  
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## DIAMOND DRILLING

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## DIAMOND DRILLS

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American Coldset Corp.  
Coldset—see American Coldset Corp.  
Diamond Drill Carbon Co., The  
Diamond Prod., Inc.  
Diamond Tool Research Co., Inc.  
Havlic Diamond Drilling Co., Inc.  
Koebel Diamond Tool Co.  
McClintock Co., R. S.  
Meyerowitz, Inc., Leo  
Patrick, Inc., R. S.  
SMIT & CO., INC., ANTON,  
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Smit & Sons, Inc., J. K.  
SPRAGUE & HENWOOD, INC.,  
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Wall Colmonoy Corp.

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DOOR COMPANY  
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CONNECTED BUCKETLINE  
AMERICAN BRAKE SHOE CO.,  
AMER. MANGANESE STEEL  
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AMSCO—SEE AMERICAN BRAKE  
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Columbia Steel Casting Co., Inc.  
Erie Strayer Co.  
Kensington Steel Co.  
Neal Machinery Co., H. T.  
Sorel Steel Foundries Ltd.  
Taylor-Wharton Iron & Steel Co.  
UNIVERSAL DREDGE MFG. CO.,  
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Washington Iron Works  
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AMERICAN BRAKE SHOE CO.,  
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American Steel Dredge Co., Inc.  
AMSCO—SEE AMERICAN BRAKE  
SHOE CO.  
Birdsboro Steel Foundry & Machine  
Co.  
Eagle Iron Works  
ELECTRIC STEEL FOUNDRY CO.,  
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Georgia Iron Works Co.  
Kensington Steel Co.  
MORRIS MACHINE WORKS,  
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Sorel Steel Foundries Ltd.  
Taylor-Wharton Iron & Steel Co.  
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SHOE CO.  
Rodinson Mfg. Co.  
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Koehring Co.  
Maddox Foundry & Machine Works  
Neal Machinery Co., H. T.  
Pacific Coast Engineering Co.  
Page Engr. Co.  
Sorel Steel Foundries, Ltd.  
Taylor-Wharton Iron & Steel Co.  
UNIVERSAL DREDGE MFG. CO.,  
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## DRIFTERS

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## DRILLING

## CONTRACTORS

### See Exploration Services

## DRILL SHARPENERS

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Steel

## DRILL STEEL

### See Steel

## DRILLS, ROCK

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Cardox Corp., Hardmag Div.  
Central Mine Equipment Co.  
Chattanooga Mach. Co.  
CHICAGO PNEUMATIC TOOL CO.,  
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Coalmaster—see Central Mine  
Equipment Co.  
Eagle—see Four Wheel Drive Auto  
Co., The

Failing Co., Geo. E.  
Four Wheel Drive Auto Co., The  
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Equipment Co.  
Leetonia—see Leetonia Tool Co., The  
Leetonia Tool Co., The  
Marathon Coal Bit Co.  
Mayhew Supply Co.  
MC CARTHY—SEE SALEM TOOL  
CO., THE  
McLaughlin Mfg. Co.  
Mobile—see Mobile Drilling, Inc.  
Mobile Drilling, Inc.  
Multi Matic Corp.  
SALEM TOOL CO., THE, CATA-  
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Scranton Electric Construction Co.  
THOR—SEE THOR POWER TOOL  
CO.  
THOR POWER TOOL CO., CATA-  
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(WORLD MINING ONLY)  
Vascody-Barnett Corp.  
WESTINGHOUSE AIR BRAKE CO.,  
CLEVELAND ROCK DRILL  
DIV., CATALOGED ON PAGE  
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### CHURN DRILLS

Acme Fishing Tool Co.  
Bucyrus-Erie Co.  
Cyclone—see Sanderson Cyclone  
Drill Co.  
GARDNER-DENVER CO., CATA-  
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Hillman Co., C. Kirk  
HOSSFELD—SEE HOSSFELD  
MANUFACTURING CO.,  
HOSSFELD MANUFACTURING  
CO., CATALOGED ON PAGE  
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Longyear Co., E. J.  
Loomis Machine Co.  
Marathon Coal Bit Co.  
Mills Iron Works, Inc.  
Mobile—see Mobile Drilling, Inc.  
Mobile Drilling, Inc.  
Neal Machinery Co., H. T.  
Sanderson Cyclone Drill Co.  
Spang & Co.  
Stardrill-Keystone Co.

### CRAWLER MOUNTED DRILLS

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DIESEL A. B.  
ATLAS DIESEL A. B. CATA-  
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32 (WORLD MINING ONLY)  
Bucyrus-Erie Co.  
Cyclone—see Sanderson Cyclone  
Drill Co.  
Failing Co., Geo. E.  
GARDNER-DENVER CO., CATA-  
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Hillman Co., C. Kirk  
INGERSOLL-RAND CO., CATA-  
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JOY MANUFACTURING CO.,  
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Keystone Driller Co.  
Landis Steel Co.  
Loomis Machine Co.  
Mayhew Supply Co.  
Mobile—see Mobile Drilling, Inc.  
Mobile Drilling, Inc.  
REICH BROS. MFG. CO., CATA-  
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Sanderson Cyclone Drill Co.  
Schramm, Inc.  
Stardrill-Keystone Co.  
THOR POWER TOOL CO., CATA-  
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(WORLD MINING ONLY)  
WESTINGHOUSE AIR BRAKE CO.,  
CLEVELAND ROCK DRILL  
DIV., CATALOGED ON PAGE  
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American Diamond Drill Co.  
BOYLES BROS. DRILLING CO.,  
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BOYLES BROS. DRILLING CO.,  
LTD., (CANADA) CATA-  
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CHICAGO PNEUMATIC TOOL  
CO., CATALOGED ON PAGE  
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Diamond Drill Contracting Co.  
Failing Co., Geo. E.  
General Electric Co., Carbonyl Dept.  
INGERSOLL-RAND CO., CATA-  
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JOY MANUFACTURING CO.,  
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Junction Bit & Tool Co.  
Koebel Diamond Tool Co.  
Longyear Co., E. J.  
McClintock Co., R. S.  
Metal Carbides Corp.  
Minerals Engr. Co.  
Mobile—see Mobile Drilling, Inc.  
Mobile Drilling, Inc.  
Mott Core Drilling Co.  
Neal Machinery Co., H. T.  
Penn-drill—see Pennsylvania Drill-  
ing Co.  
Pennsylvania Drilling Co.  
SMIT & CO., INC., ANTON, CATA-  
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SPRAGUE & HENWOOD, INC.,  
CATALOGED ON PAGE 211,  
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Telluride Iron Wks.  
United Iron Works Co.  
Wheel Trussing Tool Co.

#### GASOLINE DRILLS AND HAMMERS

ATEAS DIESEL, A. B., CATA-  
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HOSSFELD MANUFACTURING  
CO., CATALOGED ON PAGE  
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JOY MANUFACTURING CO.,  
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STANCO MFG. & SALES, INC.,  
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SYNTRON CO., CATALOGED ON  
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Warsop Power Tools, Inc.

#### JET PIERCING DRILLS

Bucyrus Erie Co.  
Linde Air Prod. Co.  
Mobile—see Mobile Drilling, Inc.  
Mobile Drilling, Inc.  
Union Carbon & Carbide Corp.  
Linde Air Products Co., Div.

#### JUMBO AND BOOM ASSEMBLIES

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GARDNER-DENVER CO., CATA-  
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Gismo—see Sanford Day Iron Wks.  
HYDRIC DRILL, INC.—SEE JOY  
MANUFACTURING CO.  
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Rogers Iron Works Co.  
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CO.  
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Neal Machinery Co., H. T.  
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CO.  
THOR POWER TOOL CO., CATA-  
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WESTINGHOUSE AIR BRAKE CO.,  
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Worthington—see Power Equip Co.

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Cincinnati Electrical Tool Co.  
GARDNER-DENVER CO., CATA-  
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ing Co.  
Pennsylvania Drilling Co.  
Seismograph Service Corp.  
SPRAGUE & HENWOOD, INC.,  
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Stardrill-Keystone Co.  
Varel Mfg. Co.  
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4  
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Longyear Co., E. J.  
Mayhew Supply Co.  
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Mobile Drilling, Inc.

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National Supply Co. (Pa.)  
Penn Mach. Co.  
Penn-drill—see Pennsylvania Drill-  
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Pennsylvania Drilling Co.  
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erals Engr. Co.  
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Schramm Inc.  
Worthington—see Power Equip. Co.  
Worthington Corp.

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Longyear Co., E. J.  
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Roi Div.  
Winter Weiss Co.

#### DRIVES, GEAR

##### See Gears

#### DRIVES

See Also Shaft Mounted Drives:  
Gears; Open Gearing

#### CHAIN

Atlas Chain & Mfg. Co.  
Bodinson Mfg. Co.  
Boston Gear Wks.  
Browning Mfg. Co.  
Chain Belt Co.  
Christiana Mach. Co.  
Cullman Wheel Co.  
Dodge Mfg. Co.  
B. F. Goodrich Co., Industrial Prod.  
Div.  
Idam—see National Supply Co.,  
(Pa.)  
JEFFREY MFG. CO., THE, CATA-  
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Morse Chain Co.  
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National Supply Co. (Pa.)  
Palmer See Co.  
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Webb Corp., The  
Webster Mfg. Co.  
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#### FLATBELT

American Pulley Co.  
AMERICAN RUBBER MFG. CO.,  
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Bodinson Mfg. Co.  
Boston Gear Wks.  
Browning Mfg. Co.  
Dodge Mfg. Co.  
Fisher Leather Belting Co.  
Gate Rubber Co.  
NATIONAL IRON CO., CATA-  
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Packing Co.  
U. S. Rubber Co.  
U. S. Rubber Int'l.  
Webb Corp., The  
Western Gear Wks.  
Wood's Sons Co., T. B.  
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Bodinson Mfg. Co.  
Boston Gear Wks.  
Boston Woven Hose & Rubber Co.  
Browning Mfg. Co.  
Dodge Mfg. Co.  
Gates Rubber Co.  
Goodrich Co., B. F., Industrial Prod.  
Div.  
Jones Foundry & Mach. Co., W. A.  
LINK BELT CO., CATALOGED ON  
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ING ONLY)  
MAGIC GRIP—SEE ALLIS-CHAL-  
MERS MFG. CO.  
Mosebach Electric & Supply Co.  
National Supply Co. (Pa.)  
Palmer See Co.  
Reeves Pulley Co.  
TEXROPE—SEE ALLIS-CHAL-  
MERS MFG. CO.  
U. S. Rubber Co.  
U. S. Rubber Int'l.  
Webb Corp., The  
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Bethlehem Foundry & Machine Co.  
Bethlehem Steel Co.  
Bodinson Mfg. Co.  
Carrier Conveyor Corp.  
Centrifugal & Mechanical Indus-  
tries, Inc.  
Christian Engineers, J. D.  
COLORADO IRON WORKS CO.,  
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Combustion Engineering—Super-  
heater, Inc., Raymond Pulver-  
izer Div.  
DENVER EQUIPMENT CO., CAT-  
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Despatch Oven Co.  
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Ellerman Co., The  
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Corp.  
General Machinery Co.  
GOULD & CO., GORDON L., CATA-  
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Graham White Mfg. Co., Princeton  
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HARDINGE CO., INC., CATA-  
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Co.  
Hepi & Paterson, Inc.  
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Holmes & Bros., Inc., Robert  
Indiana Foundry Co.  
Ingalls Iron Wks.  
Iowa Manufacturing Co.  
Kennedy-Van Seun Mfg. & Eng.  
Corp.  
Kerrigan Iron Works, Inc.  
Lowden—see Colorado Iron Works  
Co.



## Dumpers

McLanahan & Stone Corp.  
Neal Machinery Co., H. T.  
Nichols Engineering & Research Corp.  
**NORDBERG MANUFACTURING CO., CATALOGED ON PAGE 8, 9**  
Okadoe Co.  
Pacific Coast Engr. Co.  
**PACIFIC FOUNDRY CO., LTD., CATALOGED ON PAGE 125**  
Pollock Co., The William B.  
Roberts & Schaefer Co.  
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Saracco Tank & Welding Co.  
**SMITH & CO., F. L., CATALOGED ON PAGE 20**  
Southern Engineering Co.  
Southwest Welding & Mfg. Co.  
**STANDARD STEEL CORP., CATALOGED ON PAGE 18**  
**STEARNS ROGER MFG. CO., CATALOGED ON PAGE 269**  
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**TRAYLOR ENGINEERING & MFG. CO., CATALOGED ON PAGE 213-228**  
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Washington Machinery Co.  
Webb Corp., The

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**CARD IRON WORKS CO., THE C. S., CATALOGED ON PAGE 266, 267**  
Cousar d'Alone Hardware & Foundry Co.  
Connellville Mfg. & Mine Supply Co.  
**DIFFERENTIAL STEEL CAR CO., CATALOGED ON PAGE 74**  
Eastern Construction, Inc.  
**GARDNER-DENVER CO., CATALOGED ON PAGE 17**  
**GREGG CO., LTD., THE, CATALOGED ON PAGE 14, 15**  
Hewitt Robbins, Inc.  
Hoyl & Patterson, Inc.  
Holmes & Bros., Inc., Robert  
Irwin Foundry & Mine Car Co.  
Koechling Co.  
**LAKE SHORE ENGR. CO., CATALOGED ON PAGE 31**  
**LINK-BELT—SEE LINK-BELT CO. LINK-BELT CO., CATALOGED ON PAGE WM 250 (WORLD MINING ONLY)**  
McNally Pittsburgh Co.  
Miners Foundry & Mfg. Co.  
Nolan—see Nolan Co., The  
Nolan Co., The  
Pacific Car & Foundry Co.  
Roberts & Schaefer Co.  
Rosen Iron Works  
Telleride Iron Works  
United Iron Works Co.  
**UNITED STATES STEEL EXPORT CO., CATALOGED ON INSIDE FRONT COVER (WORLD MINING ONLY)**  
Webb Corp., The  
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Wellman Engineering Co.

## DUST COLLECTION

### EQUIPMENT

Acme Machinery Co.  
Aerodyne Atlantic Corp.  
Airmaster—see Cincinnati Electrical Tool Co.  
**ALLEN-SHERMAN-HOFF PUMP CO., THE, CATALOGED ON INSIDE FRONT COVER**  
American Air Filter Co.  
American Blower Corp.  
American Wheelabrator & Equipment Corp.  
Buell Engineering Co., Inc.  
Buffalo Forge Co.  
Buffalo—see Buffalo Forge Co.  
By-Products Recoveries, Inc.  
Cincinnati Electrical Tool Co.  
Combustion Engineering-Superheater, Inc., Raymond Pulverizer Div.  
Convalir, Inc.  
Cottrell—see Research Cottrell, Inc.  
Dunlap—see Western Precipitation Corp.  
Ducan Co.  
Dustube—see American Wheelabrator & Equipment Corp.  
Exhaust—see Lammson Corp.  
Flexant—see Flexant Co., The  
Flexant Co., The  
Fraser & Chalmers  
Holly Pneumatic Systems, Inc.  
Ieva Manufacturing Co.

Johnson March Corp.  
Kennedy-Van Saus Mfg. & Eng. Corp.  
Kirk & Blum Mfg. Co., The  
Koppers Co. Inc., Metal Prod. Div.  
Lammson Corp.  
Lang Co.  
Macdonald Co.  
Magne Inc.  
Markely Dust Control System, Inc.  
**MARTINDALE ELECTRIC CO., CATALOGED ON PAGE 292**  
Micro Metallic Corp.  
Minerals Engr. Co.  
**MINE SAFETY APPLIANCES CO., CATALOGED ON PAGE 247**  
National Filter Media Corp.  
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Research Cottrell, Inc.  
Roberts & Schaefer Co.  
Saracco Tank & Welding Co.  
Savage Co., W. J.  
Scheible Co., Claude B.  
Sly Mfg. Co., The W. W.  
**STURTEVANT MILL CO., CATALOGED ON PAGE WM 18 (WORLD MINING ONLY)**  
Turner and Hays Engineering Co.  
Western Precipitation Corp.  
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Westinghouse Electric Corp.

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See also Magnetic Equipment; Locomotives; Batteries; Chargers; Welding Equipment; Supplies and Services; Hoisting Equipment; Communications; Winches; Cable and Conduit; Testing and Control Equipment

### BRUSHES

Carbons Corp.  
Co-operative Utilities Co., Inc.  
Diamond D—see Co-operative Utilities  
Ohio Carbon Co.  
Southern Carbon Brush Co.  
Speer Carbon Co.  
Stackpole Carbon Co.  
Superior Carbon Prod., Inc.

### CABLE AND CONDUIT

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### INSTRUMENTS

See Testing and Control Equipment

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Allis-Chalmers Mfg. Co., Buda Co., The Div.  
American Locomotive Co.  
Atlas—see National Supply Co., The  
Cummins Engine Co., Inc.  
**DENVER EQUIPMENT CO., CATALOGED ON INSIDE BACK COVER**  
Fairbanks, Morse & Co.  
General Metals Corp., Enterprise Div.  
**GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., CATALOGED ON PAGE 193**  
General Electric Co.  
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**GRAYBAR ELECTRIC CO., INC., CATALOGED ON PAGE 199**  
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Hallett Manufacturing Co.  
**HARNISCHFEGGER CORP., CATALOGED ON PAGE 1**  
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Kohler Co.  
Lake Shore Electric Corp.  
Lester-Blackstone, Inc.  
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Lynco Powerhouse—see Lynn Engr. & Supply Co.  
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**Neal Machinery Co., H. T. NORDBERG MANUFACTURING CO., CATALOGED ON PAGE 8, 9**  
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Power Plants, Inc.  
Pyle National Co., The  
Ready Power Co.  
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Superior—see National Supply Co., The  
Telleride Iron Wks.  
Universal Motor Co.  
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**MOTORS, GENERATORS, AND CONVERTERS**

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Allis Co., The  
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Leland Electric Co., The—a Div.  
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Clark Electronic Corp.  
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Columbia Electric Mfg. Co.  
Connecticut Telephone & Electric Corp.  
Continental Electric Co., Inc.  
DeWalt Inc.  
Diehl—see Diehl Mfg. Co.  
Diehl Mfg. Co.  
Electric Machinery Mfg. Co.  
Electric Products Co., The  
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Elliott—see Elliott Co.  
Elliott Co.  
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General Dynamics Corp., Electro Dynamic Div.  
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Howell Electric Motors Co.  
Ideal Electric & Mfg. Co.  
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Kenyon Machinery Co.  
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Norrbush—see Georator Corp.  
Lamb Electric Co.  
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Lima Electric Motor Co., The  
Lincoln Electric Co.  
Linde Air Products Co.  
Marathon Electric Mfg. Corp.  
Marble Card Electric Corp.  
Master Electric Co., The  
Miehle Printing Press & Mfg. Co.  
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Neal Machinery Co., H. T.  
Northwestern Electric Co.  
Onan & Sons, Inc., D. W.  
Peoples Electric Co., The  
S & M—see Robbins & Meyers, Inc.  
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Reliance Electric & Engineering Co.  
Robbins & Meyers, Inc.  
Sterling Electric Motors, Inc.  
Telleride Iron Wks.  
Terminal Radio Intl. Ltd.  
Tri-Clad—see International General Electric Co.  
Uniload—see U.S. Electrical Motors, Inc.  
U.S. Electrical Motors, Inc.  
Wagner—see Warner Electric Corp.  
Wagner Electric Corp.  
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Wesche Electric Co.  
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Westinghouse Electric Corp.  
Worthington Corp.  
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Molony Electric Co.  
Mosebach Electric & Supply Co.  
Neal Machinery Co., H. T.  
Pennsylvania Transformer Co.  
Hershel—see Electrical Facilities, Inc.  
Sorgel Electric Co.  
Standard Transformer Co.  
States Co.  
**SYNTRON CO., CATALOGED ON PAGE 197**  
Wagner—see Wagner Electric Corp.  
Wagner Electric Corp.  
**WESTINGHOUSE ELECTRIC INTERNATIONAL CO., CATALOGED ON PAGE WM 3 (WORLD MINING ONLY)**  
Westinghouse Electric Corp.



Weston Electrical Instrument Corp.

# **MISCELLANEOUS (CONDENSERS, RESISTORS, POTENTIOMETERS, ETC.)**

Allen-Bradley Co.  
ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
LOGED ON PAGE 229-234  
AMERICAN MINE DOOR CO.,  
CATALOGED ON PAGE 304,  
WM 115 (WORLD MINING  
ONLY)

Anderson Mfg. Co.  
Automatic Switch Co.  
Barkley Electric Mfg. Co.  
Biddle Co., James G.  
Brvant Electrical Co.  
Buffalo Forge Co.  
Busmann Mfg. Co.  
Carbone Corp., The  
Central Scientific Co.  
Clark Controller Co., The  
Clark Electronic Corp.  
Columbia—see Columbia Electric  
Mfg. Co.

Columbia Electric Mfg. Co.  
Deltron Electric Prod., Inc.  
ECAM Frequency Relay Control—  
see Electric Controller & Mfg.  
Co. The

ECAM Valvitor—see Electric Con-  
troller & Mfg. Co. The  
Electric Controller & Mfg. Co., The  
Electrical Engrs. Equip. Co.  
Electrical Facilities, Inc.  
Electro-Tech. Equip. Co.  
Elliot Co., Crocker-Wheeler Div.  
Euclid Electrical & Mfg. Co.  
Fielden Co.

Flood City—see Flood City Brass  
& Electric Co.  
Flood City Brass & Electric Co.  
G. & W. Electric Specialty Co.  
General Electric Co. Apparatus  
Sales Div.

GRAYBAR ELECTRIC CO., INC.,  
CATALOGED ON PAGE 199  
Guyman Mach. Co.  
Hart Mfg. Co.  
I.T.E. Circuit Breaker Co.  
Ideal Industries, Inc.

INTERNATIONAL GENERAL  
ELECTRIC CO., CATALOGED  
ON PAGE WM 340, 241  
(WORLD MINING ONLY)

International Resistance Co.  
Ironton Engine Co., The  
JOY MANUFACTURING CO.,  
CATALOGED ON PAGE 260,  
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Maric Chem. Co.  
MARTINDALE ELECTRIC CO.,  
CATALOGED ON PAGE 262  
Memco Engineering & Mfg. Co.,  
Inc.

Meyers Safety Switch Co., Inc.  
Minneapolis-Honeywell Regulator  
Co., Indus. Div.  
Ohio Carbon Co., The  
Ohlshom—see Ohio Carbon Co., The

Parker Electric Mfg. Co.  
Parker Electric Mfg. Co.  
Pennsylvania Electrical Coil Corp.  
Penn March Co.  
Post Glover Electric Co., The  
Rawson Electrical Instrument Co.  
Reelife—see Appleton Electric Com-  
pany

Regulux—see Allis Chalmers Mfg.  
Co.  
Revere Electric Manufacturing Co.  
Rowan Controller Co.  
Rupair—see Allis Chalmers Mfg.  
Co.

Schroeder Brothers  
Signal Eng. & Mfg. Co.  
Speer Carbon Co.  
Stackpole Carbon Co.  
States Co.  
Struthers Dunn, Inc.  
Superior Carbon Prod., Inc.  
Terminal Radio Int'l. Ltd.  
Trico Fuse Mfg. Co.  
Trombeta Solenoid Corp.  
Unilux—see Appleton Electric  
Company

U. S. Graphite Co.  
Wadsworth Electric Mfg. Co.  
Ward Leonard Electric Co.  
WESTINGHOUSE ELECTRIC IN-  
TERNATIONAL CO., CATA-  
LOGED ON PAGE WM 2  
(WORLD MINING ONLY)

Weston Electrical Instrument Corp.  
Wicks Corp., The—United States  
Graphite Co., a Div.

## **ENGINEERING SERVICES**

See Plant Design and Construc-  
tion; Exploration Services; Con-  
sulting Mining Engineers

## **ENGINEERING SUPPLIES & DRAFTING EQUIPMENT**

See also Surveying Instruments

Actograph—see Newage Intl., Inc.  
Berger & Sons, Inc.  
Black Diamond Spad Company  
Bodinson Mfg. Co.  
Bruning Co., Inc., Chas.  
Dietzgen Co., Eugene  
Dunkin Blue Print & Supply Co.  
Electric Tachometer Corp.  
General Aniline & Film Corp.,  
Osald A Div.

Joseph Dixon Crucible Co.  
Keuffel & Esser Co.  
Leupold & Stevens  
Larkin Rule Co.  
Newage Intl., Inc.  
Paragon-Revolute Corp.  
Pease Co., The C.F.  
Post Co., Frederick

Rocky Mountain Instrument Co.  
Sterling—see Warren Knight Co.  
Warren-Knight Co.  
White Co., David  
WILD HEERBRUGG INSTRU-  
MENTS, INC., CATALOGED  
ON PAGE 80

Zernickow Co., O.

## **ENGINES**

See also Electrical Equipment

DIESEL AND SEMI-DIESEL  
ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
LOGED ON PAGE 229-236  
Allis-Chalmers Mfg. Co., Buda Co.,  
The

American Locomotive Co.  
Anderson-O'Brien Co.  
Atlas—see National Supply Co., The  
Baldwin-Lima-Hamilton Corp. Ed-  
dystone Div.  
Caterpillar Tractor Co.  
CHICAGO PNEUMATIC TOOL  
CO., CATALOGED ON PAGE  
29

Cooper-Bessemer Corp., The  
Cummins Engine Co., Inc.  
Enterprise Eng. & Mach. Co.  
Fairbanks, Morse & Co.  
General Metals Corp., Enterprise  
Div.

General Motors Corp., Enterprise  
Engine & Machinery Co.—a  
Subsidiary  
GENERAL MOTORS CORP. DE-  
TROIT DIESEL ENGINE DI-  
VISION, CATALOGED ON  
PAGE 263

GENERAL MOTORS OVERSEAS  
OPERATIONS, CATALOGED  
ON PAGE WM 20 (WORLD  
MINING ONLY)

Hallett Manufacturing Co.  
HARNISCHFEGGER CORP., CATA-  
LOGED ON PAGE 7  
Hercules Motors Corp.  
Hillman Co., C. Kirk  
INGERSOLL-RAND CO., CATA-  
LOGED ON PAGE 27, 283

INTERNATIONAL—SEE INTER-  
NATIONAL HARVESTER EX-  
PORT CO.  
INTERNATIONAL HARVESTER  
CO., CATALOGED ON PAGE  
6

INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGED  
ON PAGE WM 6 (WORLD  
MINING ONLY)

Johnson Mfg. Co.  
Keeney Co., Paul E.  
Klochner-Humboldt-Deuts Ag  
Lake Shore Electric Corp.  
Lister—see National Supply Co.,  
The

Lister-Blackstone, Inc.  
MINE & SMELTER SUPPLY CO.,  
THE MARCY MILL DIV.,  
CATALOGED ON PAGE 248,  
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Minneapolis-Moline Co.  
National Supply Co., The  
National Supply Co., The—Engine  
Div.

Neal Machinery Co., H. T.  
NORDBERG MANUFACTURING  
CO., CATALOGED ON PAGE  
8, 9

Oliver Corp., The  
Onan & Sons, Inc., D.W.  
Page Eng. Co.  
P & H—SEE HARNISCHFEGGER  
CORP.

Power Equip. Co.  
Roder-Blackburn Intl. Corp.

Sheppard Co., R. H.  
Superior—see National Supply Co.,  
The  
U. S. Steel Corp., Witte Engine  
Works, Oil Well Supply Div.

Washington Iron Wks.  
Waukesha—see Waukesha Motor Co.  
Waukesha Motor Co.  
Witte Eng. Wks., Oil Well Supply  
Div.  
Worthington Corp.

## **GAS**

ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
LOGED ON PAGE 229-234  
Allis-Chalmers Mfg. Co., Buda Co.,  
The—a Div.

Anderson-O'Brien Co.  
Atlas—National Supply Co., The  
CHICAGO PNEUMATIC TOOL  
CO., CATALOGED ON PAGE  
29

Climax Blue Streak—see Climax  
Engine & Pump Mfg. Co.  
Climax Engine & Pump Mfg. Co.  
Continental Motor Corp.  
Cooper-Bessemer Corp.  
Cummins Engine Co., Inc.

Enterprise Eng. & Mach. Co.  
Fairbanks, Morse & Co.  
General Metals Corp., Enterprise  
Div.

Hercules Motors Corp.  
INGERSOLL-RAND CO., CATA-  
LOGED ON PAGE 27, 283  
INTERNATIONAL—SEE INTER-  
NATIONAL HARVESTER EX-  
PORT CO.

INTERNATIONAL HARVESTER  
CO., CATALOGED ON PAGE  
6

INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGED  
ON PAGE WM 6 (WORLD  
MINING ONLY)

Klochner-Humboldt-Deuts Ag  
Minneapolis-Moline Co.  
National Supply Co. (Pa.)  
National Supply Co., The, Engine  
Div.

NORDBERG MANUFACTURING  
CO., CATALOGED ON PAGE  
8, 9  
Novo Engine Co.  
Onan & Sons, Inc., D. W.  
Superior—see National Supply Co.,  
The

Telluride Iron Wks.  
U. S. Steel Corp., Witte Engine  
Works, Oil Well Supply Div.  
Waukesha—see Waukesha Motor Co.

Waukesha Motor Co.  
Westinghouse Air Brake Co., Le Roi  
Div.  
Wisconsin Motor Corp.  
Witte Eng. Wks., Oil Well Supply  
Div.

Worthington Corp.

## **GASOLINE**

ALLIS-CHALMERS MFG. CO.,  
GEN. MACHY. DIV., CATA-  
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Allis-Chalmers Mfg. Co., Buda Co.,  
The—a Div.

Anderson-O'Brien Co.  
Briggs & Stratton Corp.  
Climax Blue Streak—see Climax  
Engine & Pump Mfg. Co.  
Climax Engine & Pump Mfg. Co.  
Ford Motor Co.

G. M. C., Allison Div.  
Hercules Motors Corp.  
INTERNATIONAL—SEE INTER-  
NATIONAL HARVESTER EX-  
PORT CO.

INTERNATIONAL HARVESTER  
CO., CATALOGED ON PAGE  
6

INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGED  
ON PAGE WM 6 (WORLD  
MINING ONLY)

Koehring Southern Co.  
Le Roi Div., Westinghouse Air  
Brake Co.  
MINE & SMELTER SUPPLY CO.,  
THE MARCY MILL DIV.,  
CATALOGED ON PAGE 248,  
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Minneapolis-Moline Co.  
National Supply Co., The, Engine  
Div.  
Oliver Corp., The  
Onan & Sons, Inc., D. W.  
Power Equip. Co.  
Turbo Jet—see G. M. C., Allison  
Div.

Turbo Prop—see G. M. C., Allison  
Div.  
U. S. Steel Corp., Witte Engine  
Works, Oil Well Supply Div.  
Universal Motor Co.  
Waukesha—see Waukesha Motor  
Co.

Waukesha Motor Co.  
Westinghouse Air Brake Co., Le Roi  
Div.

Wisconsin Motor Corp.  
Witte Eng. Wks., Oil Well Supply  
Div.

## **EXCAVATORS**

See also Tractors and Attach-  
ments; Dredges and Dredge  
Buckets; Loaders; Monitors;  
Scrapers

## **BACKHOES**

American—see American Hoist &  
Derrick Co.  
American Brake Shoe Co.  
American Hoist & Derrick Co.  
American Steel Dredge Co., Inc.  
Bay City Shovel, Inc.  
Bucyrus-Erie Co.

Clark Equip. Co., Construction  
Mach. Div.  
Garwood Industries, Inc.  
Hanson Clutch & Mach. Co.  
HARNISCHFEGGER CORP., CATA-  
LOGED ON PAGE 7

Inley Mfg. Co.  
Koehring Co.  
Manitowoc Eng. Co.  
MARION POWER SHOVEL CO.,  
CATALOGED ON PAGE 11

NORTHWEST ENG. CO., CATA-  
LOGED ON PAGE 89  
Pence & Co., Inc., Earl H.  
Power Equip. Co.  
Quick Way Truck Shovel Co.  
Schield Bantam Co.  
Thew Shovel Co.

Unit Crane & Shovel Corp.  
Wayne—see American Steel Dredge  
Co., Inc.

## **CABLEWAYS**

### **Stockline**

Neal Machinery Co., H. T.  
SAUERMAN BROS., INC., CATA-  
LOGED ON PAGE 116  
Superior-Lidgerwood-Mundy Corp.  
Washington Iron Wks.

## **CABLEWAYS**

### **Tautline**

SAUERMAN BROS., INC., CATA-  
LOGED ON PAGE 116  
Superior-Lidgerwood-Mundy Corp.  
UNITED STATES STEEL EXPORT  
CO., CATALOGED ON INSIDE  
FRONT COVER (WORLD  
MINING ONLY)

Washington Iron Wks.

## **DRAGLINES**

### **Diesel**

American—see American Hoist &  
Derrick Co.  
American Hoist & Derrick Co.  
American Steel Dredge Co., Inc.  
BALDWIN - LIMA - HAMILTON  
CORP., CATALOGED ON  
PAGE 28

Bay City Shovel Inc.  
Bucyrus-Erie Co.  
Clark Equip. Co., Const. Mach. Div.  
Hanson Clutch & Mach. Co.  
HARNISCHFEGGER CORP., CATA-  
LOGED ON PAGE 7

HYSTER CO., CATALOGED ON  
PAGE 25  
Inley Mfg. Co.  
Koehring Co.

LIMA—SEE BALDWIN-LIMA-  
HAMILTON CORP.  
Manitowoc Eng. Co.  
MARION POWER SHOVEL CO.,  
CATALOGED ON PAGE 11

NORTHWEST ENG. CO., CATA-  
LOGED ON PAGE 89  
Page Eng. Co.  
Power Equip. Co.  
Quick Way Truck Shovel Co.  
Schield Bantam Co.  
Thew Shovel Co.

Unit Crane & Shovel Corp.  
Wayne—see American Steel Dredge  
Co., Inc.

## **Electric**

American—see American Hoist &  
Derrick Co.  
American Hoist & Derrick Co.  
Bucyrus Erie Co.  
HARNISCHFEGGER CORP., CATA-  
LOGED ON PAGE 7

Koehring Co.  
Manitowoc Eng. Co.  
MARION POWER SHOVEL CO.,  
CATALOGED ON PAGE 11

NORTHWEST ENG. CO., CATA-  
LOGED ON PAGE 89  
Page Eng. Co.  
Thew Shovel Co.

## **PARTS AND ATTACHMENTS**

ALLOY STEEL & METALS CO.,  
CATALOGED ON PAGE 244

## Exploration Equipment

**AMERICAN BRAKE SHOE CO.**  
AMER. MANGANESE STEEL  
DIV., CATALOGED ON PAGE  
23

**American Hoist & Derrick Co.**  
American Steel Dredge Co., Inc.  
Bucyrus Erie Co.  
**COLORADO FUEL & IRON CORP.**  
CATALOGED ON PAGE 246,  
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**ELECTRIC STEEL FOUNDRY  
CO.** CATALOGED ON PAGE  
31

Hales Co., Wm.  
Hanson Clutch & Mach. Co.  
Hensley—see Hensley Equip. Co.  
Hensley Equip. Co.  
Inaley Mfg. Co.

**INTERNATIONAL HARVESTER  
CO.** CATALOGED ON PAGE  
6

Industrial Overlay Metals  
Koehring Co.

**MARION POWER SHOVEL CO.**  
CATALOGED ON PAGE 11

Owen Bucket Co.  
**PACIFIC—SEE ALLOY STEEL &  
METALS CO.**

Page Engineering Co.  
Pence & Co., Inc., Earl H.  
Power Equip. Co.  
Schield Bantam Co.  
Shunk Mfg. Co.  
Sorel Steel Foundries Ltd.  
Taylor Wharton Iron & Steel Co.  
Thew Shovel Co.  
Union Chain & Mfg. Co.  
Unit Crane & Shovel Corp.

### SCRAPERS, SELF-PROPELLED

Allis-Chalmers Manufacturing Co.,  
Tractor Division.  
Beaumont Birch Co.  
Caterpillar Tractor Co.  
Carroll—see LeTourneau-Weasting-  
house Co.  
Crichton Co.

**GENERAL MOTORS CORP., EU-  
CLID DIVISION.** CATALOGED  
ON PAGE 105

**MINERAL MOTORS OVERSEAN  
OPERATIONS.** CATALOGED  
ON PAGE WM 28 (WORLD  
MINING ONLY)

General Motors Corp., Twin Power  
Hell Co., The  
**INTERNATIONAL HARVESTER  
CO.** CATALOGED ON PAGE  
6

Landis Steel Co.  
LeTourneau-Weastinghouse Co.  
Power Equip. Co.  
Sanford Day Iron Wks.  
Shunk Mfg. Co.  
Weastinghouse Co., Le Tourneau

### SHAFT MUCKERS—see Shaft Sinking

### SHOVELS, POWER

#### Diesel

American Hoist & Derrick Co.  
American Steel Dredge Co., Inc.  
**BALDWIN - LIMA - HAMILTON  
CORP., LIMA - HAMILTON  
DIV.,** CATALOGED ON PAGE  
24

Bay City—see Bay City Shovels,  
Inc.

Bay City Shovels, Inc.  
Bucyrus-Erie Co.

Caterpillar Tractor Co.  
Crichton Co.

Clark Equipment Co.  
Clyde Iron Works, Inc.

**EIMCO CORP., THE.** CATALOGED  
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**ELECTRIC STEEL FOUNDRY CO.**  
CATALOGED ON PAGE 31

Garwood Industries Inc.  
Hanson Clutch & Machinery Co.

**HARNISCHFEGGER CORP., CATA-  
LOGED ON PAGE 7**

Hyman-Michaels Co.  
**HYSTER CO., CATALOGED ON  
PAGE 12**

Inaley Manufacturing Corp.  
Keystone Driller Co.

Koehring Co.  
**LIMA - SEE BALDWIN - LIMA -  
HAMILTON CORP.**

Link-Belt Speeder Corp.  
Lorain—see Thew Shovel Co.

Manitowoc—see Manitowoc Engi-  
neering Corp.

Manitowoc Engineering Corp.  
**MARION POWER SHOVEL CO.,  
CATALOGED ON PAGE 11**

Michigan—see Clark Equipment Co.  
Myers Whaley Co., Inc.

**NORTHWEST ENGINEERING CO.,  
CATALOGED ON PAGE 28**

Osgood-General  
**P & H—SEE HARNISCHFEGGER  
CORP.**

Pence & Co., Inc., Earl H.  
Power Equip. Co.  
Quick-Way Truck Shovel Co.  
Roder Blackburn Intl. Corp.  
Schield Bantam—see Schield Ban-  
tam Co.  
Schield Bantam Co.  
Thew Shovel Co.  
Unit Crane & Shovel Corp.  
Wayne—see American Steel Dredge  
Co., Inc.

### Electric

Bay City—see Bay City Shovels,  
Inc.

Bay City Shovels, Inc.  
Bucyrus-Erie Co.

**EIMCO CORP., THE.** CATALOGED  
ON PAGE 221-224

**ELECTRIC STEEL FOUNDRY CO.,  
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**HARNISCHFEGGER CORP., CATA-  
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Inaley Manufacturing Corp.  
Koehring Co.

Link-Belt Speeder Corp.  
**MARION POWER SHOVEL CO.,  
CATALOGED ON PAGE 11**

Myers Whaley Co., Inc.  
Neal Machinery Co. H. T.

**NORTHWEST ENGINEERING CO.,  
CATALOGED ON PAGE 28**

Osgood-General  
**P & H—SEE HARNISCHFEGGER  
CORP.**

Quick-Way Truck Shovel Co.  
Schield Bantam—see Schield Ban-  
tam Co.

Schield Bantam Co.  
Thew Shovel Co.  
Unit Crane & Shovel Corp.

## EXPLORATION EQUIPMENT

### See also Drills, Rock

### Geochemical Equipment

Chemalloy Electronics Corp.  
Hillman Co. C. Kirk  
Menlo Research Lab.  
Mobile Drilling, Inc.  
Research Inc.

### Geophysical Equipment

Allied Geophysics  
Davis Instrument Mfg. Co., Inc.  
Detlectron Corp.  
Electronics Products Co.  
Elitronics Inc.

**ENGINEERS SYNDICATE, LTD.,  
CATALOGED ON PAGE 25**

Falls Co., Geo.  
**FISHER RESEARCH LABORA-  
TORY, INC., CATALOGED ON  
PAGE 28**

Georator Corp.  
Geovoltmeter—see Georator Corp.

Goldak Co., The  
Hillman Co. C. Kirk

Houston Technical Labs.  
International Geophys. Inc.

Longyear Co., E. J.  
**M-SCOPE—SEE FISHER RE-  
SEARCH LABORATORY, INC.**

MacClatchie Mfg. Co.  
Menlo Research Lab.

Mobile Drilling, Inc.  
Multi Matic Corp.

Nuclear Instrument & Chemical  
Corp.

**PRECISION RADIATION IN-  
STRUMENTS INC., CATA-  
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Radac Co., Inc., The  
**REICH BROS. MFG. CO., CATA-  
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Research Inc.  
**SALEM TOOL CO., THE. CATA-  
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**ULTRA VIOLET PROD., INC.,  
CATALOGED ON PAGE 24**

Uranium Enterprises  
Varel Mfg. Co.

Vietron Instrument Co.  
Weastinghouse Electric Corp.

### ULTRA VIOLET LIGHTS

Atomic Research Corp.  
**MINERALIGHT - SEE ULTRA  
VIOLET PROD., INC.**

**ULTRA VIOLET PROD., INC.,  
CATALOGED ON PAGE 24**

## EXPLORATION

## SERVICES

### DRILLING

#### Churn

Acme Drilling Service  
Diamond Drill Contracting Co.

**ENGINEERS SYNDICATE, LTD.,  
CATALOGED ON PAGE 25**

Hillman Co., C. Kirk  
Judd & Son, J. D.

Koebel Diamond Tool Co.  
Longyear Co., E. J.

Manu Mine Research & Develop-  
ment Co.

Mobile Drilling, Inc.  
Mott Core Drilling Co.

Pennsylvania Drilling Co.  
**SPRAGUE & HENWOOD, INC.,  
CATALOGED ON PAGE 211,**

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World Mining Consultants, Inc.  
**YUBA MANUFACTURING CO.,  
CATALOGED ON PAGE 78**

### Diamond

Acme Drilling Service  
**BOYLES BROS. DRILLING CO.,  
CATALOGED ON PAGE 238**

**BOYLES BROS. DRILLING CO.,  
LTD. (CANADA), CATA-  
LOGED ON PAGE 243**

Continental Drilling Co.  
Diamond Drill Contracting Co.

Diamond Prod., Inc.  
**ENGINEERS SYNDICATE, LTD.,  
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Havlick Diamond Drilling Co., Inc.  
**JOY MANUFACTURING CO.,  
CATALOGED ON PAGE 246,**

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Junction Bit & Tool Co.  
Longyear Co., E. J.

Manu-Mine Research & Develop-  
ment Co.

**MCCLINTOCK CO., R. S., CATA-  
LOGED ON PAGE 123**

McDonald, T. J.  
Minerals Engineering Co.

**MOAB DRILLING CO., CATA-  
LOGED ON PAGE 123**

Mobile Drilling, Inc.  
Mott Core Drilling Co.

New World Exploration, Res. &  
Dev. Corp.

Palmer & Decker  
Pennsylvania Drilling Co.

**SMIT & CO., INC., ANTON, CATA-  
LOGED ON PAGE 97**

**SPRAGUE & HENWOOD, INC.,  
CATALOGED ON PAGE 211,**

212  
St. Clair, John Q.  
Tinney Drilling Co.

United Geophysical Corp.  
World Mining Consultants, Inc.

### Rotary

Carbox Corp.  
**CORPC PACIFIC, LTD., CATA-  
LOGED ON PAGE 68**

**ENGINEERS SYNDICATE, LTD.,  
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Exploration Drilling Co.  
**JOY MANUFACTURING CO.,  
CATALOGED ON PAGE 246,**

247  
Manu Mine Research & Dev. Co.

Minerals Engr. Co.  
Mobile Drilling, Inc.

Pennsylvania Drilling Co.  
Reinhardt, Elmer

**REICH BROS. MFG. CO., CATA-  
LOGED ON PAGE 78**

St. Clair, John Q.  
United Geophysical Corp.

Varel Mfg. Co.  
World Mining Consultants, Inc.

### SURVEYING

#### Aerial

Abrams Aerial Survey Corp.  
Aero Service Corp.

Allied Geophysics  
Chapman and Wood

El Tronics, Inc.  
**ENGINEERS SYNDICATE, LTD.,  
CATALOGED ON PAGE 25**

Fairchild Aerial Surveys Inc.  
Laylander, Philip A.

Longyear Co., E. J.  
Manu Mine Research & Dev. Co.

Minerals Exploration Research Corp.  
New World Exploration, Res. &  
Dev. Corp.

Nuclear Instrument & Chem. Corp.  
Permo Exploration Co.

**PRECISION RADIATION IN-  
STRUMENTS, INC., CATA-  
LOGED ON PAGE 261**

Radac Company, Inc., The  
Reinhardt, Elmer

Research Inc.  
St. Clair, John Q.

**STILL, ARTHUR R., CATALOGED  
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Uranium Enterprises

### Geochemical

Chemalloy Electronics Co.

Engel, Rene  
**ENGINEERS SYNDICATE, LTD.,  
CATALOGED ON PAGE 25**

International Geophysics, Inc.  
Laylander, Philip A.

Longyear Co., E. J.  
Manu-Mine Research & Develop-  
ment Co.  
Minerals Exploration Research Corp.  
New World Exploration, Res. &  
Dev. Corp.  
Radac Co., Inc., The  
Reinhardt, Elmer  
Research, Inc.  
Still, Arthur R.

### Geological

Aero Service Corp.  
Atomic Research Corp.

Bartell, A. O.  
Chapman and Wood

Engel, Rene  
**ENGINEERS SYNDICATE, LTD.,  
CATALOGED ON PAGE 25**

Fisher Research Laboratory, Inc.  
Geo-Engineering

Hulin, Carlton D.  
International Geophysics, Inc.

**KEEGEL, C. P., CATALOGED ON  
PAGE 123**

Laylander, Philip A.  
Longyear Co., E. J.

**M-SCOPE - SEE FISHER RE-  
SEARCH LABORATORY, INC.**

Manu-Mine Research & Develop-  
ment Co.

Minerals Engr. Co.  
Minerals Exploration Research Corp.

Murphy, F. M.  
New World Exploration, Res. &  
Dev. Corp.

Peale, Rogers  
Permo Exploration Co.

Pratt, Wm. H.  
**PRECISION RADIATION IN-  
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Radac Co. Inc., The  
Reinhardt, Elmer

Shedwick, Jr., Wm. J.  
Spanaki & Williamson

St. Clair, John Q.  
Stephenson, Robert C.

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Co.

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Armstrong-Bray & Co.

Carlyle Rubber Co., Inc.  
Clipper—see Clipper Belt Lacer Co.

Clipper Belt Lacer Co.  
Continental Gln Co.—Industrial Div.

Crescent—see Crescent Belt Fasten-  
er Co.

Crescent Belt Fastener Co.  
Detroit Belt Lacer Co.  
Dick Co. Inc., R. & J.  
Edwards & Co., E. D.  
Fenwick Manufacturing Co.  
Flexco—see Flexible Steel Lacing Co.  
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Goodall Rubber Co.  
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Steelgrip—see Armstrong-Bray & Co.  
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Three Point Belt Lacing, Inc.  
Webb Corp., The  
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Barber-Greene Co., Inc.  
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Bonded Scale & Machine Co.  
Chain Belt Co.  
Christian—see Christian Engineers, J. D.  
Christian Engineers, J. D.  
Columbus Conveyor Co.  
Connellville Mfg. & Mine Supply Co.  
Continental Gin Co.—Industrial Div. Conveyor Co., The  
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Rex—see Chain Belt Co.  
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Roberts & Schaefer Co.  
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## Belt

Barber-Greene Co.  
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Chain Belt Co.  
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Haynes Stellite Co.  
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Power Equip. Co.

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Tourna-hopper—see LeTourneau-Westinghouse Co.

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Coeur d'Alene Hardware & Foundry Co.

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Reading Crane & Hoist

Robbins & Meyers, Inc.

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Round Chain Co.'s

Round Woodhouse Chain & Mfg. Co.

Sanford Day Iron Wks.

Saugen Derrick Co.

Seismograph Service Corp.

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Silent Hoist & Crane Co.

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Petrocol—see Sharples Chemicals  
Inc.

Petrofote—see Sonnsborn Soma,  
Inc., L.

Reilly Tar & Chemical Corp.  
Republic Cresoating Co.

Sharples Chemicals Inc.  
Sonnsborn Soma, Inc., L.

Stein, Hall & Co., Inc.  
Tennessee Prod. & Chem. Corp.

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Allied Chemical & Dye Corp., Bar-  
rett Div.

American Lumber & Treating Co.  
Avenarius Carbolineum—see Carbo-  
lineum Wood Preserving Co.

Berk & Co., Inc., F.W.

C-A—see C-A Wood Preserver Co.  
C-A Wood Preserver Co.

Carbolineum Wood Preserving Co.  
Cuprinol—see Cuprinol Div., Dar-  
worth Inc.

Cuprinol Div., Darworth Inc.  
DOW CHEMICAL CO., THE, CAT-  
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General Petroleum Corp.  
Gillbreath Chemical Co.

Koppers Co., Inc., Wolman Dept.  
Mersolites-Berk & Co., Inc.

Republic Cresoating Co.  
Oronite Chemical Co.

Osmose Wood Preserving Co. of  
America, Inc.

Reilly Tar & Chemical Corp.  
Tennessee Prod. & Chem. Corp.

U—see Gillbreath Chemical Co.  
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Wolman—see American Lumber &  
Treating Co.

##### OTHER ACIDS AND CHEMICALS

Allied Chem. & Dye Corp., Barrett  
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Allied General Chemical Div.  
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American Potash & Chemical Corp.  
Apache Powder Co.

Armour Chemical Division  
Atlas Powder Co.

Baker Chem. Co., J.T.  
Berk & Co., Inc., F.W.

Braun Corp.  
Braun-Knecht-Heimann Co.

Central Scientific Co.  
Central Scientific Co. of Calif.

Denver Fire Clay Co.  
DOW CHEMICAL CO., THE, CAT-  
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du Pont de Nemours & Co., E. I.,  
Grasselli Chemicals Dept.

Food Machinery & Chemical Corp.  
Westvaco Chemical Div.

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GUANTEC—SEE GENERAL  
MILLS, INC.

Hercules Powder Co.  
Johnson March Corp.

Koppers Co., Inc.  
Mallinckrodt Chemical Works

Manu-Mine Research & Develop-  
ment Co.

Matheson Co., Inc.  
Mons Research Lab.

Merk & Co.  
Metallurgical Prod. Co.

Minerac Corp.  
Monsanto Chemical Co.

Nitroze Co., Inc.  
Oronite Chemical Co.

Phelps Dodge Refining Corp.  
Philadelphia Quartz Co.

Reilly Tar & Chem. Corp.  
Republic Cresoating Co.

Sharples Chemicals Inc.  
Stein, Hall & Co., Inc.

Stein & Co., Technical Prod. Plant  
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Union Carbide and Carbon Corp.  
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Westvaco-Chlor-Alkali Div., Food  
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Wolman Salts—see Koppers Co.,  
Inc., Wolman Dept.

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#### REDUCERS, SPEED

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Bodinson Mfg. Co.  
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Brad-Foots Gear Wks., Inc.  
Christian—see J.D. Christian Engg.

Christian Engg., J.D.  
Christians Mach. Co.

Dodge Mfg. Co.  
Earle Gear Mach. Co.

Falk Corp.  
Farrel-Birmingham Co., Inc.

Foots Bros. Gear & Mach. Corp.  
General Dynamic Corp., Elector  
Dynamic Div.

Hygrade—see Foots Bros. Gear &  
Mach. Corp.

Jones Foundry & Mach. Co., W.A.  
Lima—see Lima Electric Motor Co.

Lima Electric Motor Co.  
Line-O-Power—see Foots Bros. Gear  
& Mach. Corp.

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ING ONLY)

Maxipower—see Foots Bros. Gear &  
Mach. Corp.

National Supply Co., (Pa.)  
Ohio Forge & Mach. Corp.

Ohio Gear Co.  
Oilgear Co., The

Palmer-Bee Co.  
Perkins Mach. & Gear Co.

Philadelphia Gear Wks., Inc.  
Reliance Electric & Engr. Co.

SACD—SEE STEPHENS-ADAM-  
SON MFG. CO.

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Sterling Electric Motors, Inc.  
Stimmler Winch Co., Inc.

SyncoGear—see U. S. Electrical  
Motors, Inc.

Telluride Iron Wks.  
U. S. Electrical Motors, Inc.

Vickers, Inc.  
Western Gear Wks.

WinSmith, Inc.  
Worthington Corp.

#### REFRACTORIES

Air Placement Equip. Co.  
Alfrax—see Carborundum Co., The

Alundum—see Norton Co.  
Axiac—see Mexico Refractories Co.

Babecek & Wilcox Co.  
BLAZECRETE—SEE JOHN-  
MANVILLE

Carbofrax—see Carborundum Co.,  
The

Carborundum Co., The, Refractories  
Div.

Cohart Refractories Co.  
Crytolon—see Norton Co.

DPC—see Denver Fire Clay Co., The

Denver Fire Clay Co., The,  
Joseph Dixon Crucible Co.

EMPIRE—see Green Fire Brick Co.,  
A. F.

Firecrete—see Johns-Manville  
General Refractories Co.

Green Fire Brick Co., A. F.  
Harrison-Walker Refractories Co.

Ironton—see Ironton Fire Brick  
Co.

Ironton Fire Brick Co.  
Jay Bee—see Mexico Refractories  
Co.

JOHNS-MANVILLE SALES CORP.,  
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Laciale-Christy Co.  
Mexico Refractories Co.

MEX-KO—see Green Fire Brick  
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Mex-R-Co—see Mexico Refractories  
Co.

Monofrax—see Carborundum Co.,  
The

Multifrax—see Carborundum Co.,  
The

North American Refractories Co.  
Norton Co.

Pilbrico—see Pilbrico Co.  
Pilbrico Co.

Pilecast—Pilbrico Co.  
Quigley Co., Inc.

Utah Fire Clay Co.

#### RESPIRATORS

See Safety Equipment

#### ROASTING

#### FURNACES

See Dryers and Kilns; Pyro-  
metallurgical Equipment; Sinter-  
ing Machines

#### ROCK BOLTS

See Bolts, Rock

#### ROD MILLS

See Grinding Equipment

#### RODS

See Grinding Equipment;  
Welding Equipment

#### ROLLS, ROLLERS

See Crushers; Conveyors

#### ROOF BOLTS

See Bolts, Rock

#### ROPE, WIRE, AND

#### ACCESSORIES

Alpha Wire Corp.  
American Chain & Cable Company,  
Inc.

American Chain & Cable Co., Inc.,  
Hazard Wire Rope Div.

American Hoist & Derrick Co.  
American Mfg. Co.

Bergan Wire Rope Co.  
Bethlehem Pacific Coast Steel Corp.

Bethlehem Steel Corp.  
Bethlehem Steel Export Corp.

Bodinson Mfg. Co.  
British Ropes Ltd.

Broderick & Basson Rope Co.  
Bullard-Burnham—see Bullard Co.,  
E. D.

Canada Wire & Cable Co., Ltd.,  
P. B. "B"

Carco—see Pacific Car & Foundry  
Co.

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Climax—see Fenwick Mfg. Co.  
Crosby—see American Hoist & Derrick  
Co.

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ELECTRIC STEEL FOUNDRY CO.,  
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Falling Co., Geo. F.,  
Fenwick Mfg. Co.

—see Co., L. B.  
FENWICK ELECTRIC CO., INC.,  
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Itt-Robins, Inc.

J. & S. Laughlin Steel Corp.  
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K & M—see Kenney & Mattison Co.  
Kenney & Mattison Co.

Kellums Co.  
Laughlin Co., The Thomas  
LeTourneau-Westinghouse Co.

**Manufacturer's Complete Names and  
Addresses are listed in Section II, last  
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## Rubber Products

**LESCHEN WIRE ROPE**—SEE H.E. PORTER CO., INC. CATALOGED ON PAGE 44

**MacWhirte Co.**  
Mill & Mine Supply, Inc.  
Mosebach Electric & Supply Co.  
New Bedford Cordage Co.  
Pacific Car & Foundry Co.  
Pacific Wire Rope Co.  
Paulsen-Webber Cordage Corp.  
H. E. PORTER CO., INC.  
**LESCHEN WIRE ROPE DIV.**  
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**Roder-Blackburn Intl. Corp.**  
Reebing's Sons Corp., John A. Round Chain Co.  
Riverson & Son, Inc., Joseph T. SAUERMAN BROS., INC. CATALOGED ON PAGE 116

**Telluride Iron Wks.**  
Tournapoe—see LeTournais-West Inghouse Co.  
Union Wire Rope Corp.  
U. S. Steel Corp.  
U.S.S. Tire Brand—see United States Steel Corp., Columbia-Geneva Steel Div.  
U. S. Steel Corp., Tennessee Coal & Iron Div.  
United States Steel Corp., Columbia-Geneva Steel Div.  
**UNITED STATES STEEL EXPORT CO.** CATALOGED ON INSIDE FRONT COVER (WORLD MINING ONLY)

**Upon-Wallace Co., The**  
Wall Rope Wks., Inc.  
Whitlock Cordage Co.  
Wire Rope Corp. of America, Inc.  
**WICKWIRE**—SEE COLORADO FUEL & IRON CORP., THE

## RUBBER PRODUCTS

See Belts, Hoses, Conveyor Equipment, Safety Equipment

## SAFETY EQUIPMENT

### APPAREL

**American Optical Co.**  
Bone Dry Shoe Mfg. Co.  
Bullard Co., E. D.  
Continental Rubber Wks.  
Gardwell—see Safety Clothing & Equipment Co.  
Goodall Rubber Co.  
Hobart—see Hobart Bros. Co.  
Hobart Bros. Co.  
**INDUSTRIAL AIR PRODUCTS CO.** CATALOGED ON PAGE 79

**Industrial Gloves Co.**  
**JOHNS-MANVILLE SALES CORP.** CATALOGED ON PAGE 242

**Lehigh Safety Shoe Co.**  
**MARTINDALE ELECTRIC CO.** CATALOGED ON PAGE 202

**McDonald Co., R.F.**  
Miller Equip. Co., Inc.  
**MINE SAFETY APPLIANCES CO.** CATALOGED ON PAGE 247

**Parker Safety Equipment Co.**  
Penn Mfg. & Supply Co.  
Pulmonan Safety Equip. Corp.  
Rose Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sellsstrom Mfg. Co.  
Snyder & Son, Inc., M. L. Stanley Co., Inc., William W. Steel-Crip—see Industrial Gloves Co.  
United States Rubber Co.  
Victor Equipment Co.  
Wilcox Barre Cap Mfg. Co.

### FIREFIGHTING EQUIPMENT

**American-LaFrance-Pomette Corp.**  
American Rubber Mfg. Co.  
Ansal Chem. Co.  
Badger Fire Extinguisher Co.  
Elliott Bros. Mfg. Co., Inc.  
F. R. Mfg. Co.  
Four Wheel Drive Auto Co., The  
Fry-Fryer Co.  
The General Detroit Corp.  
Grinnell Co., Inc.  
Hewitt-Robins, Inc.  
Kiddie—see Walker Kiddie & Co., Inc.  
Parker Safety Equip. Corp.  
Pulmonan Safety Equip. Corp.  
Pyrene-C-O-Two

**Safety Fire Extinguisher Co.**  
Safety First Supply Co.  
Snyder & Son, Inc., M. L. Walker Kiddie & Co., Inc.

### GENERAL

**A & A Mfg. Co.**  
American Optical Co.  
Bullard Co., E. D.  
Chicago Eye Shield Co.  
Cover, H. S.  
Farris Engineering Corp.  
Gardwell—see Safety Clothing & Equip. Co.  
Gibraltar Equipment & Mfg. Co.  
Klein & Sons, Mathias  
Linde Air Products Co.  
McDonald Co., R. F.  
Michell Mfg. Co.  
Miller Equipment Co., Inc.  
**MINE SAFETY APPLIANCES CO.** CATALOGED ON PAGE 247

**National First Aid Supply Co.**  
Pace Belting Co.  
Pangborn Corp.  
Parker Safety Equipment Co.  
Pulmonan Safety Equip. Corp.  
Rhoads & Son, J. E.  
Rose Mfg. Co.  
Safe-Hi—see Rose Mfg. Co.  
Safety Clothing & Equipment Co.  
Safety First Supply Co.  
Sellsstrom Mfg. Co.  
Snyder & Son, Inc., M. L. Tolman Mfg. Co.  
United States Safety Service Co.  
Wilson Products, Inc.

### LIGHTS

**Benjamin Electric Mfg. Co.**  
Bright Star Industries  
Burgess Battery Co.  
Crag—see Concordia Electric Co.  
Champion—see Champion Lamp Works  
Champion Lamp Works  
Concordia Electric Co.  
Curtis Lighting Co.  
Davis Instrument Mfg. Co.  
Dunn-Tust Corp.  
**EDISON—SEE MINE SAFETY APPLIANCES CO.**  
Electric Storage Battery Co., The  
Exide Ind. Div.  
Fluxide Lightguard—see Exide Ind. Div.  
Fulton Mfg. Corp.  
General Electric Co., Lamp Div.  
General Equipment & Mfg. Co.  
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Justrite Mfg. Co.  
Kochler Mfg. Co.—see National Mine Service Co.  
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**MARTINDALE ELECTRIC CO.** CATALOGED ON PAGE 202

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**Mosebach Electric & Supply Co.**  
National Mine Service Co.  
Parker Safety Equip. Co.  
Pittsburgh Reflector Co.  
Prie-Nation Co., The  
Reverse Electric Mfg. Co.  
Safety First Supply Co.  
Schroeder Brothers  
Stebler Mfg. Co.  
United States Electric Mfg. Corp.  
Westinghouse Electric Corp., Cleveland Div.  
Wheat—see National Mine Service Co.  
Wil-Son Mfg. Co.  
Wolf Safety Lamp Co. of America

### RESPIRATORS

**American Optical Co.**  
Bullard Co., Ed.  
Chicago Eye Shield Co.  
Cover, H. S.  
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Parker Safety Equip. Co.  
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Sellsstrom Mfg. Co.  
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Willson Prod., Inc.

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**Linde Air Prod. Co.**  
McDonald Co., R.F.  
National Cylinder Gas Co.  
Safety First Supply Co.

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**HARDINGE CO., INC.** CATALOGED ON PAGE 94, 95

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**LEDoux & CO., CATALOGED ON PAGE 123**  
Longyear Co., E. J.  
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**Pennsylvania Drilling Co.**  
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**TRAVLER EGR. & MFG. CO.** CATALOGED ON PAGE 213, 220

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**Homelite Corp.**  
Mill & Mine Supply, Inc.  
**PORTO-CUT—SEE VULCAN IRON WORKS, DENVER, COLO.**  
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**VULCAN IRON WORKS (DENVER), CATALOGED ON PAGE 10**

**Wright Power Saw and Tool Corp.**

### FRAMING SAWS

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**STEARNS ROGER MFG. CO.** CATALOGED ON PAGE 249

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**Bradford Mach. Tool Co., The**  
**CHICAGO PNEUMATIC TOOL CO., CATALOGED ON PAGE 29**

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**Peerless Machine Co.**  
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**Porter Cable Mach. Co.**  
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**Wright Power Saw & Tool Corp.**

## SCALES

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Beaumont Birch Co.  
B-I-F Industries, Inc., Builder Providence Div.  
Bodinson Mfg. Co.  
Buffalo Scale Co., Inc.  
Chatillon & Sons, John  
Conover Co., The  
**DENVER EQUIPMENT CO., CATALOGED ON INSIDE BACK COVER**

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Howe Scale Co., The  
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Toledo Scale Co.  
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**Webb Corp., The**  
**WEIGHTOMETER—SEE MERRICK SCALE MFG. CO.**

## TRUCK AND RAILROAD SCALES

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**Bonded—see Bonded Scale and Machine Co.**  
**Bonded Scale and Machine Co.**  
Buffalo Scale Co., Inc.  
Chatillon & Sons, John  
Fairbanks, Morse & Co.  
Holmes & Bros., Inc.  
Howe Scale Co., The  
Streeter-Amescon Co.  
Toledo Scale Co.  
Webb Corp., The  
Winslow—see Winslow Govt. Std. Scale Wks., Inc.  
Winslow Govt. Std. Scale Works, Inc.

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**ALLOY STEEL & METALS CO., CATALOGED ON PAGE 254**

**AMERICAN BRAKE SHOE CO., AMER. MANGANESE STEEL DIV., CATALOGED ON PAGE 23**

**AMSCO—SEE AMERICAN BRAKE SHOE CO.**

**Caterpillar Tractor Co.**  
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**Marcus Steel Foundries Ltd. PACIFIC—SEE ALLOY STEEL & METALS CO.**

**Pacific Car & Foundry Co.**  
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**Westinghouse Co., LeTournais Woolridge Mfg. Co.**

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**SHAKING AND VIBRATING SCREENS**

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Ajax Flexible Coupling Co.  
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Bodinson Mfg. Co.  
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Bonded Scale and Machine Co.  
Braun-Knecht-Helmann Co.  
Buffalo Wire Wks.  
**CAL-WIC—SEE COLORADO FUEL & IRON CORP., THE**



## Scrubbers

Cambridge Wire Cloth Co.  
Carrier Conveyor Corp.  
Central Scientific Co.  
Chicago Perforating Co.  
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Davis Foundry Machine Works  
**DEISTER CONCENTRATOR CO.**  
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Diamond Mfg. Co.  
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Exolon Co., The  
Fraser & Chalmers, Eng. Wks.

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**GOODMAN MFG. CO.** CATA-  
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Grundlach Machine Co., T. J.  
Harrington & King Perforating Co.  
Hendrick—see Hendrick Mfg. Co.  
Hendrick Mfg. Co.  
Hewitt-Robins, Inc.  
Holmes & Bros., Inc., Robert

**HUM-MRY—SEE TYLER CO., THE**

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International Combustion Ltd.  
Iowa Mfg. Co.

**JEFFREY MFG. CO., THE** CATA-  
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Korb Pettit-Wire Fabrics & Iron  
Wks., Inc.  
Laubenstein Mfg. Co.

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**TRATOR CO.**  
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**MERS MFG. CO.**  
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Phillips Corp.  
Pioneer Engineering Works, Inc.

Productive Equipment Corp.  
Recoveries, Inc.  
Remaly Mfg. Co.

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**MERS MFG. CO.**  
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Rogers Iron Works Co.  
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**FEEDER CO.**  
**ROSS SCREEN & FEEDER CO.**

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Smith Engineering Works  
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**STEPHENS-ADAMSON MFG. CO.**

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Straub Mfg. Co., Inc.  
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**CO.**  
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Symons Bros. Co.

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Taylor-Wharton Iron & Steel Co.

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**TY-ROCK—SEE TYLER CO., THE**

**W. S.**  
**TYLER CO., THE W. S.** CATA-  
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**AMERICAN MANGANESE**  
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**SHOE CO.**  
Rodinson Mfg. Co.

**STOP — FOX**  
Bonded—see Bonded Scale and Ma-  
chine Co.

Bonded Scale and Machine Co.  
Buffalo Wire Wks.  
**CAL-WIC—SEE COLORADO FUEL**

**& IRON CORP., THE**  
**CARD IRON WKS., CO.** CATA-  
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Chicago Perforating Co.  
Cleveland Wire Cloth & Mfg. Co.  
**COLORADO FUEL & IRON CORP.**

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Columbia Steel Casting Co., Inc.

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Davis Foundry & Machine Works  
Diamond Iron Works Co.

Diamond Mfg. Co.  
Fraser & Chalmers Eng. Wks.  
**GOODMAN MFG. CO.** CATA-

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Gruendler Crusher & Pulverizer Co.

Grundlach Machine Co., T. J.  
Harrington & King Perforating Co.  
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Hendrick Mfg. Co.  
Hewitt-Robins, Inc.  
Holmes & Bros., Inc.

Iowa Mfg. Co.  
**JEFFREY MFG. CO., THE** CATA-  
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Kennedy-Van Saun Mfg. & Eng.  
Corp.  
Laubenstein Mfg. Co.

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ING ONLY)  
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MacKlin Equip. Co.  
Manganese Steel Forge Co.  
**NATIONAL IRON CO.** CATA-

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Phillips Corp.

**ROSS SCREEN & FEEDER CO.**  
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Smith Engineering Works

Southwestern Engineering Co.  
Straub Mfg. Co., Inc.  
**STEPHENS-ADAMSON MFG. CO.**

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gineering Co.  
**SYNTRON CO.** CATALOGED ON  
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Telluride Iron Wks.  
**TRAYLOR ENGINEERING & MFG.**

**CO.** CATALOGED ON PAGE  
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Universal Engineering Corp.  
Universal Road Mach.

Washington Iron Wks.  
Washington Machinery Co.  
Webb Corp., The

**WEDGE WIRE CORP., CATA-**  
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**YUBA MFG. CO.** CATALOGED

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**TROMMELS**  
**ALLIS CHALMERS MFG. CO.**

**GEN. MACHY. DIV.** CATA-  
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**AMERICAN BRAKE SHOE CO.**

**AMER. MANGANESE STEEL**  
**DIV.** CATALOGED ON PAGE  
22  
**AMSCO—SEE AMERICAN BRAKE**

**SHOE CO.**  
Rodinson Mfg. Co.  
Buffalo Wire Wks.

**CAL-WIC—SEE COLORADO FUEL**  
**& IRON CORP., THE**  
Card Iron Wks. Co., Cataloged on  
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Chicago Perforating Co.  
Cleveland Wire Cloth & Mfg. Co.  
**COLORADO FUEL & IRON CORP.**

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Columbia Steel Casting Co., Inc.

Conveyor Co., The  
Davis Foundry & Machine Works  
Diamond Iron Works Co.

Diamond Mfg. Co.  
Gruendler Crusher & Pulverizer Co.  
Guindlach Machine Co., T. J.

Harrington & King Perforating Co.  
Hendrick—see Hendrick Mfg. Co.  
Hendrick Mfg. Co.

Iowa Mfg. Co.  
**JEFFREY MFG. CO., THE** CATA-  
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Corp.  
Laubenstein Mfg. Co.

**LINK-BELT — SEE LINK-BELT**  
**CO.**  
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ING ONLY)  
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Manganese Steel Forge Co.  
McLanahan & Stone Corp.

Miners Foundry & Mfg. Co.  
Newark Wire Cloth Co.  
**NORDBERG MFG. CO.** CATA-

LOGED ON PAGE 8, 9  
Phillips Corp.  
Pioneer Engineering Works, Inc.

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chinery Co.  
Remaly Mfg. Co.

Rogers Iron Works Co.  
Savage Co., W. J.  
Smith Engineering Works

**STEARNS ROGER MFG. CO.**  
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Stephan Corp., The

**STEPHENS-ADAMSON MFG. CO.**  
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**CO.**  
Taylor-Wharton Iron & Steel Co.

Telluride Iron Wks.  
**TRAYLOR ENGR. & MFG. CO.**  
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Universal Engineering Corp.  
Universal Road Machinery Co.

Washington Iron Wks.  
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**WEDGE WIRE CORP.** CATA-

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## VERTICAL SCREENS

**NORDBERG MFG. CO.** CATA-  
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**SYMONS—SEE NORDBERG MFG.**

**CO.**  
**VIBRATING GRIZZLES**  
**NORDBERG MFG. CO.** CATA-

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**SYMONS—SEE NORDBERG MFG.**  
**CO.**

## WIRE AND BAR SCREENS

**ALLIS CHALMERS MFG. CO.**  
**GEN. MACHY. DIV.** CATA-

LOGED ON PAGE 225-226  
**AMERICAN BRAKE SHOE CO.**  
**AMER. MANGANESE STEEL**

**DIV.** CATALOGED ON PAGE  
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**HOE CO.**  
Bixby-Zimmer Engineering Co.  
Rodinson Mfg. Co.

Bonded—see Bonded Scale Mfg. Co.  
Bonded Scale Mfg. Co.  
Buffalo Wire Wks.

**CAL-WIC—SEE COLORADO FUEL**  
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Cleveland Wire Cloth & Mfg. Co.  
**COLORADO FUEL & IRON CORP.**  
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Hewitt-Robins, Inc.  
Hewitt-Robins, Inc., Korb-Pettit

Wire Fabrics & Iron Works,  
Inc., a subsid.  
Iowa Mfg. Co.

**JEFFREY MFG. CO., THE** CATA-  
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Korb Pettit Wire Fabrics & Iron

Wks., Inc.  
Lippmann Engineering Works  
Ludlow-Saylor Wire Cloth Co.

Manganese Steel Forge Co.  
Michigan Wire Cloth Co.  
Newark Wire Cloth Co.

**NORDBERG MFG. CO.** CATA-  
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Pioneer Eng. Wks., Inc.  
Productive Equip. Corp.  
Remaly Mfg. Co.

Roberts & Schaefer Co.  
**ROSS SCREEN & FEEDER CO.**  
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Simplicity Engineering Co.  
Smith Engineering Works

**STARSTEEL—SEE Star Wire Screen**  
**& Iron Works, Inc.**  
Star Wire Screen & Iron Works, Inc.

**SUPER-LOY—see Ludlow-Saylor**  
**Wire Cloth Co.**  
**SYMONS—SEE NORDBERG MFG.**

**CO.**  
Taylor-Wharton Iron & Steel Co.  
**TYLER CO., THE W. S.** CATA-

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Webb Corp., The  
Wedge Bar Screen Corp.

Wedge Slot—see Hendrick Mfg. Co.  
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Binks Mfg. Co.  
Buffalo Wire Wks.

Chain Belt Co.  
**DEISTER CONCENTRATOR CO.**  
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Delster Machine Co.  
Grinnel Co., Inc.

Guindlach Machine Co., T. J.  
Hydraulic Supply Mfg. Co.  
Iowa Mfg. Co.

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**CO.**  
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ING ONLY)  
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Spray Engineering Co.  
Universal Road Mach.  
Yarnall Waring Co.

**YUBA MFG. CO.** CATALOGED ON  
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## EXHAUST, DIESEL

Bodinson Mfg. Co.  
**EIMCO CORP., THE** CATA-

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National Mine Service Co.

Ruth Co., The  
**SAND**  
**ALLIS CHALMERS MFG. CO.**

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Dresser Stacey Co.

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ON PAGE 221-224  
Gruendler Crusher & Pulverizer Co.

**HARDINGE CO., INC.** CATA-  
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**LINK-BELT CO.** CATALOGED  
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MINING ONLY)  
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McLanahan & Stone Co.

Pioneer Engineering Works, Inc.  
Reliance—see Universal Road Ma-  
chinery Co.

Rogers Iron Works Co.  
Ruth Co., The  
Smith Engineering Works

Straub Mfg. Co., Inc.  
Telluride Iron Wks.  
**UNIVERSAL DREDGE MFG. CO.**

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96 (WORLD MINING ONLY)  
Universal Engineering Corp.

Universal Road Machinery Corp.  
Washington Machinery Co.  
**WEMCO—SEE WESTERN MA-**

**CHINERY CO.**  
**WESTERN MACHINERY CO.**  
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## SELF LOADING TRANSPORT, UNDERGROUND

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Hewitt Robbins, Inc.  
Sanford Day Iron Wks.  
U. S. Steel Corp., Columbia Geneva Steel Div.

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CE-Raymond—see Combustion Engineering, Inc.  
Combustion Engineering, Inc.  
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Kirk & Blum Mfg. Co., The  
New Jersey Meter Co.  
Reliance-Grayco—see Universal Road Machinery Co.  
Roberts & Schaefer Co.  
**STURTEVANT MILL CO.** CATALOGED ON PAGE WM 18 (WORLD MINING ONLY)  
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Universal Road Machinery Co.  
Universal Road Mach. Co., B. M. Gray Div.  
**WILLIAMS CRUSHER & PULVERIZER CO.** CATALOGED ON PAGE 243

### ELECTROSTATIC

**ENGINEERS SYNDICATE, LTD.** CATALOGED ON PAGE 85  
Sutton, Steele & Steele, Inc.  
**WESTINGHOUSE ELECTRIC INTERNATIONAL CO.** CATALOGED ON PAGE WM 2 (WORLD MINING ONLY)

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### CIRCULAR

**ALLISON STEEL MFG. CO.** CATALOGED ON PAGE 83  
Commercial Shearing & Stamping Co.

### YIELDABLE

Bethlehem Steel Corp.  
Bethlehem Steel Export Corp.

## SHAFT COUPLINGS

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## SHAFT MOUNTED DRIVES

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Falk Corp., The  
Marland One-Way Clutch Co.

## SHAFT SINKING

### CONTRACTORS

Cowin & Co., Inc.  
Darn Corp.  
Johnson Co., The R. G.  
Longyear Co., E. J.  
McClintock Co.  
Minerals Engineering Co.

### EQUIPMENT

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Covett & Co., Inc.  
**KIMCO CORP.** CATALOGED ON PAGE 221-224  
Holmes & Bros., Inc.  
**MAYO TUNNEL & MINES EQUIP.** CATALOGED ON PAGE WM 133 (WORLD MINING ONLY)  
Miners Foundry & Mfg. Co.  
**PINAZZA—SEE VULCAN IRON WKS. (COLO.)**  
**WESTINGHOUSE AIR BRAKE CO.** CLEVELAND ROCK DRILL DIV. CATALOGED ON PAGE 4

## SHAKERS, CAR

**ALLIS-CHALMERS MFG. CO.** GEN. MACHY DIV. CATALOGED ON PAGE 225-226  
Eastern Construction, Inc.  
Hewitt-Robbins, Inc.  
**LINK-BELT—SEE LINK-BELT CO.**  
**LINK-BELT CO.** CATALOGED ON PAGE WM 250 (WORLD MINING ONLY)  
R & M—see Robbins & Myers, Inc.  
Robbins & Myers, Inc.  
Simplicity Engr. Co.  
**STEPHENS-ADAMSON MFG. CO.** CATALOGED ON PAGE 237  
Webster Mfg. Co.

## SHARPENERS, ROCK BIT AND STEEL

Acme Fishing Tool Co.  
**ATLAS COPCO—SEE ATLAS DIESEL, A. B.**  
**ATLAS DIESEL, A. B.** CATALOGED ON PAGE WM 29-32 (WORLD MINING ONLY)  
Baldor Electric Co.  
Bay State Abrasive Prod. Co.  
Blount Co., J. G.  
Chicago Wheel & Mfg. Co.  
Cincinnati Electrical Tool Co.  
**COPCO PACIFIC, LTD.** CATALOGED ON PAGE 68  
**GARDNER-DENVER CO.** CATALOGED ON PAGE 17  
**INGERSOLL-RAND CO.** CATALOGED ON PAGE 27, 28  
**MINE & SMELTER SUPPLY CO.** CATALOGED ON PAGE 249  
Newage International, Inc.  
Norton Co.  
Rimonda Warden White Co.  
Stardrill-Keystone Co.  
Sterling Grinding Wheel Co.  
**THOR POWER TOOL CO.** CATALOGED ON PAGE WM 97 (WORLD MINING ONLY)  
Vitrified Wheel Co.

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**ALLIS-CHALMERS MFG. CO.** GEN. MACHY DIV. CATALOGED ON PAGE 225-226  
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**AMSCO—SEE AMERICAN BRAKE SHOE CO.**  
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**ELECTRIC STEEL FOUNDRY CO.** CATALOGED ON PAGE 21  
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Holmes & Bros., Inc., B.  
Kennedy-Van Sosen Mfg. & Eng. Corp.  
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Pollock Co., The William B.  
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**ALLIS-CHALMERS MFG. CO.** GEN. MACHY DIV. CATALOGED ON PAGE 225-226  
American Pulley Co., The  
Anderson-O'Brien Co.  
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Boston Gear Works  
Brad Foot Gear Wks., Inc.  
Christian Engineers, J. D.  
Christians Mach. Co.  
Cleveland Worm & Gear Co., The  
Continental Gin Co., Ind. Div.  
Conveyor Co., The  
Dodge Manufacturing Corp.  
Earle Gear Mach. Co., The  
Falk Corp., The  
Farrel—see Farrel-Birmingham Co., Inc.  
Farrel-Birmingham Co., Inc.  
Foots Bros. Gear & Machine Corp.  
General Dynamic Corp., Electro Dynamic Div.  
Grant Gear Wks., Inc.  
Hygrade—see Foots Bros. Gear & Machine Corp.  
Iowa Mfg. Co.  
Janetis Electric Mfg. Co.  
Jones Foundry & Machine Co., W.A.  
Lima—see Lima Electric Motor Co.  
Lima Electric Motor Co.  
Lima-O-Power—see Foots Bros. Gear & Machine Corp.  
**LINK-BELT—SEE LINK-BELT CO.**  
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Lovejoy Flexible Coupling Co.  
Manitoba Steel Foundries Ltd.  
Maxi-Power—see Foots Bros. Gear & Machine Corp.  
Metron Instrument Co.  
National Supply Co., (Pa.)  
Ohio Gear Co.  
Oilgear Co., The  
Palmer-Bee Co.  
Perkins Machine & Gear Co.  
Philadelphia Gear Works, Inc.  
Reliance Electric & Engr. Co.  
Rite-Lo-Speed—see Christian Engineers, J.D.  
Savage—see Savage Mfg. Co.  
Savage Mfg. Co.  
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Western Gear Wks.  
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**WESTINGHOUSE ELECTRIC INTERNATIONAL CO.** CATALOGED ON PAGE WM 2 (WORLD MINING ONLY)  
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Brown-Payne Co., The  
Brownlie—see Sanford Day Iron Wks.  
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Christian Engineers, J.D.  
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Flood City Brass & Electric Co.  
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**JEFFREY MFG. CO., THE** CATALOGED ON PAGE 19  
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**LINK-BELT CO.** CATALOGED ON PAGE WM 250 (WORLD MINING ONLY)  
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**STEPHENS-ADAMSON MFG. CO.** CATALOGED ON PAGE 237  
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Acme Machinery Co.  
Allegheny Metal Steel Corp.  
Allegheny Metal Steel Corp.  
Allegheny Metal Steel Corp.  
Allied Steel & Tractor Products, Inc.  
**ALLISON STEEL MFG. CO.** CATALOGED ON PAGE 85  
**AMERICAN BRAKE SHOE CO.** AMER. MANGANESE STEEL DIV. CATALOGED ON PAGE 23  
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Bethlehem Steel Co.  
Bethlehem Steel Export Co.  
Carpenter Steel Co.  
**COPCO PACIFIC, LTD.** CATALOGED ON PAGE 68  
Crucible Steel Co. of America  
**ELECTRIC STEEL FOUNDRY CO.** CATALOGED ON PAGE 21  
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**GARDNER-DENVER CO.** CATALOGED ON PAGE 17  
Helmick Foundry-Machine Co.  
Jones & Laughlin Steel Corp.  
Junction Bit & Tool Co.  
Lukens Steel Co.  
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Manganese Steel Forge Co.  
Manitoba Steel Foundries Ltd.  
Minerals Engr. Co.  
Republic—see Republic Steel Corp.  
Republic Steel Corp.  
Rhino—see Rhine Mfg. Co.  
Ryerson & Son, Inc., Joseph T.  
**SHEFFIELD STEEL CORP.** CATALOGED ON PAGE WM 123 (WORLD MINING ONLY)  
Shunk Mfg. Co.  
Silent Hoist & Crane Co.  
Sterling—see Firth Sterling, Inc.  
Stuls-Sickles Co.  
**TIMKEN ROLLER BEARING CO., THE** CATALOGED ON PAGE 237  
**UNITED STATES STEEL EXPORT CO.** CATALOGED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
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U.S. Steel Corp.  
Webb Corp., The  
Youngstown Sheet & Tube Co.

**DRILL STEEL**

Acme Machinery Co.  
**ALLISON STEEL MFG. CO.**,  
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 Bethlehem Steel Co.  
 Bethlehem Steel Export Corp.  
 Brunner & Lay Inc.  
 Carpenter Steel Co.  
 Cour d'Alene Hardware & Foundry  
 Co.  
**COPCO PACIFIC, LTD.**, CATA-  
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 Crucible Steel Co. of America  
**GARDNER-DENVER CO.**, CATA-  
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**INGERSOLL-RAND CO.**, CATA-  
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**JOY MFG. CO.**, CATALOGED ON  
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 Pennsylvania Drilling Co.  
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 Republic Steel Corp.  
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**SHEFFIELD STEEL CORP.**, CATA-  
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**U. S. STEEL EXPORT CO.**, CATA-  
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 Varel Mfg. Co.

**SETS—CIRCULAR STEEL**

Commercial Shearing & Stamping  
 Co.

**STRUCTURAL STEEL**

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**ALLISON MFG. CO.**, CATALOGED  
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 Bethlehem Pacific Coast Steel Corp.  
 Bethlehem Steel Co.  
 Bethlehem Steel Export Corp.  
 Bodinson Mfg. Co.  
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 & IRON CORP., THE  
 COLORADO FUEL & IRON CORP.,  
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 Gate City Steel, Boise  
 Inland Steel Co.  
 Jones & Laughlin Steel Corp.  
 Kaiser Steel Corp.  
**NATIONAL IRON CO.**, CATA-  
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 Pacific Car & Foundry Co.  
 Parker Electrical Mfg. Co.  
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**SHEFFIELD STEEL CORP.**, CATA-  
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**UNITED STATES STEEL EXPORT  
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Abrams Aerial Survey Corp.  
 Alsworth & Sons, Inc., Wm.  
 Berger & Sons, Inc., C.I.  
 Black Diamond Spad Co.  
 Brunson Instrument Co.  
 Branton Transit—see Wm. Alns-  
 worth & Sons, Inc.  
 Buff & Buff Mfg. Co.  
 Copperweld Steel Co., Wire & Cable  
 Div.

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 Kern Instruments, Inc.  
 Keuffel & Esser Co.  
 Longyear Co., E.J.  
 Leopold & Stevens, Inc.  
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 Menlo Research Lab.  
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 Co.  
 Warren-Knight Co.  
 White Co., David  
**WILD HEERGRUGG INSTRU-  
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**TELEPHONES**

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**TESTING**

See Laboratories

**TESTING, RECORDING  
& CONTROL  
EQUIPMENT**

See also Gauges; Scales

**MILL CONTROL**

**ALLIS-CHALMERS MFG. CO.**,  
 GEN. MACH. DIV., CATA-  
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 Assembly Prod., Inc.  
 Bailey Meter Co.  
 Beckman Instruments, Inc.  
 BIP Ind., Inc., Builders Providence  
 Div.  
 Bristol Co., The  
 Clark Controller Co., The  
 Davis Co., Nelson L.  
 Electric Controller Mfg. Co.  
 Electro Tech Equip. Co.  
 Farmers Engr. & Mfg. Co.  
 Fisher & Porter Co.  
 Foster Engr. Co.  
 Guyan Mach. Co.  
 H-B Instruments Co., Inc.  
 Heyl & Patterson, Inc.  
 Inet Division of Leach Corp.  
 Lake Shore Electric Corp.  
 Metron Instrument Co.  
 O-Z—see Zernikow Co., O.  
 Robertshaw-Fulton Controls Co.  
 Schroeder Brothers  
 Zernikow Co., O.

**PYROMETALLURGICAL CONTROL**

**ALLIS-CHALMERS MFG. CO.**,  
 GEN. MACH. DIV., CATA-  
 LOGED ON PAGE 225-236  
 Assembly Products, Inc.  
 Bailey Meter Co.  
 Barber-Colman Co.—Sheelco Instru-  
 ment Div.  
 Blue M Electric Co.  
 Bristol Co., The

Control Engr. Corp.  
 Electro Tech. Equip. Co.  
 Fielden Co.  
 Foxboro Co., The  
 Illinois Testing Labs.  
 Leeds & Northrop Co.  
 Robertshaw-Fulton Controls Co.  
 Weston Electrical Instrument Corp.

**RECORDERS**

American Machine & Metals, Inc.  
 Ametron—see Streeter-Amet Co.  
 Bailey Meter Co.  
 Bailey Meters—see Bailey Meter Co.  
 Blue M Electric Co.  
 Bristol Co., The  
 Electric Tachometer Corp.  
 Electro-Tech Equip. Co.  
 Esterline Angus Co., Inc.  
 Fielden Co.  
 Fisher & Porter Co.  
 Foxboro Co., The  
 General Electric Co., Apparatus  
 Sales Div.  
 Johnson, J.M. & O.R.  
 Leeds & Northrop Co.  
 Leopold & Stevens, Inc.  
 Logan Engr. Co.  
 Metron Instrument Co.  
**MINE & SMELTER SUPPLY CO.**,  
 CATALOGED ON PAGE 248,  
 249  
 Minneapolis-Honeywell-Heiland Div.  
 Penn Industrial Instrument Corp.  
 Richardson Scale Co.  
 Robertshaw-Fulton Controls Co.  
 Selamograph Service Corp.  
 Streeter-Amet Co.  
 Teller & Cooper, Inc.  
 Texas Instruments, Inc.  
 Zernikow Co., O.

**THICKENERS AND  
TANKS**

See also Cyclones

**STEEL TANKS**

**ALLISON STEEL MFG. CO.**, CATA-  
 LOGED ON PAGE 85  
 American Water Softener Co.  
 Beall Pipe & Tank Corp.  
 Bethlehem Steel Co.  
 Bethlehem Steel Export Corp.  
 Black, Sivalis & Bryson, Inc.  
 Buffalo Gasoline Engine Service  
 Butler Mfg. Co.  
 Caldwell Co., W.E.  
 Chicago Bridge & Iron Co.  
**COLUMBIAN STEEL TANK CO.**,  
 CATALOGED ON PAGE 79  
 Dagley Mfg. Co.  
 Davis Foundry & Machine Works  
**DENVER EQUIPMENT CO.**, CATA-  
 LOGED ON INSIDE BACK  
 COVER  
**DORR-OLIVER, INC.**, CATA-  
 LOGED ON PAGE 225-228  
 Dresser-Stacey Co.  
 Drullard Pressure Tanks—see How-  
 ard Drullard Co.  
 Enterprise Eng. & Mach. Co.  
 Filpaco Ind., Inc.  
 Gate City Steel, Boise  
 General American Transportation  
 Corp.  
 Graver Tank & Mfg. Co., Inc.  
 Grattan Trailer Corp.  
**GREGG CO., LTD.**, THE, CATA-  
 LOGED ON PAGE 14, 15  
 Hagman-Dutton Co., Hagman Con-  
 veyors, Inc.  
 Hirsch Bros. Machinery Co.  
 Hydraulic Supply Mfg. Co.  
 Ingalls Iron Wks., Birmingham  
 Tank Div.  
 Kelley & Co., O.G.  
 Kennedy-Van Saun Mfg. & Eng.  
 Corp.  
 Kirk & Blum Mfg. Co., The  
 Lakeland Bridge & Steel Co.  
 Landis Steel Co.  
 Lang Co.  
 Merrill Co.  
 Michigan Pipe Co.  
 Miners Foundry & Mfg. Co.  
**NATIONAL IRON CO.**, CATA-  
 LOGED ON PAGE 33  
 Neal Machinery Co., H.T.  
 Ogdens Iron Works Co.  
 Pollock Co., The Wm. E.  
 Process Engineering Inc.  
 Roberts & Schaefer Co.  
 Sanford-Day Iron Works Inc.  
 Saracco Tank & Welding Co.

Southwest Welding & Mfg. Co.  
 Southwestern Engineering Co.  
 Washington Mach. Co.  
 Webb Corp., The  
**WEMCO—SEE WESTERN MA-  
 CHINERY CO.**  
 Westeel Prod. Ltd.  
**WESTERN MACHINERY CO.**,  
 CATALOGED ON PAGE 13  
 Wilnot Engineering Co.  
 Wooldridge Mfg. Co.

**THICKENERS**

American Water Softener Co.  
 Arrow Tank Co., Inc.  
 Bird—see Bird Machine Co.  
 Bird Machine Co.  
 Butler Mfg. Co.  
 Caldwell Co., W.E.  
 Chicago Bridge & Iron Co.  
**COLUMBIAN STEEL TANK CO.**,  
 CATALOGED ON PAGE 79  
 Dagley Mfg. Co.  
**DENVER EQUIPMENT CO.**, CATA-  
 LOGED ON INSIDE BACK  
 COVER  
**DORR-OLIVER, INC.**, CATA-  
 LOGED ON PAGE 225-228  
 Dresser-Stacey Co.  
 Graver Tank & Mfg. Co., Inc.  
**HARDING CO., INC.**, CATA-  
 LOGED ON PAGE 94, 93  
 Heyl & Patterson, Inc.  
 Hirsch Bros. Machy. Co.  
 Ingalls Iron Wks., Birmingham  
 Tank Div.  
 Kelley & Co., O.G.  
 Kennedy-Van Saun Mfg. & Eng.  
 Corp.  
**LINK-BELT CO.**, CATALOGED ON  
 PAGE WM 256 (WORLD MIN-  
 ING ONLY)  
 Miners Foundry & Mfg. Co.  
 Morse Bros. Machinery Co.  
 Neal Machinery Co., H.T.  
 Roberts & Schaefer Co.  
 Saracco Tank & Welding Co.  
 Sintering Mach. Corp., Dwight  
 Lloyd Div.  
 Webb Corp., The  
**WEMCO—SEE WESTERN MA-  
 CHINERY CO.**  
**WESTERN MACHINERY CO.**,  
 CATALOGED ON PAGE 13

**WOOD TANKS**

Acme Tank Mfg. Co.  
 American Water Softener Co.  
 Arrow—see Arrow Tank Company  
 Inc.  
 Arrow Tank Company Inc.  
 Atlantic Tank Corporation  
 Black, Sivalis & Bryson, Inc.  
 Brooks—see Brooks Lumber Co.  
 Brooks Lumber Co.  
 Caldwell Co., W.E.  
 Dagley Manufacturing Co.  
**DENVER EQUIP. CO.**, CATA-  
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**FEDERAL PIPE & TANK CO.**,  
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 Halls & Sons, Ames H.  
 Hauser-Stander Tank Co., The  
 Kelley & Co., O.G.  
 Michigan Pipe Co.  
 Morse Bros. Machinery Co.  
 National Tank & Pipe Co.  
 Neal Machinery Co., H.T.  
 Pacific Wood Tank Corp.  
 Santa Fe Tank & Tower Co.  
**WEMCO—SEE WESTERN MA-  
 CHINERY CO.**  
**WESTERN MACHINERY CO.**,  
 CATALOGED ON PAGE 13  
 Windeler Co., Ltd., George

**TIES, TRACK**

See Track and Accessories

**TIMBER****MINI**

Gibraltar Equip. & Mfg. Co.  
 Hammond Co., J. V.  
 Meredith Co., Inc., Wm. C.  
 Osmose Wood Preserving Co. of  
 America, Inc.

**SHAFT GUIDES**

Brooks Lumber Co.  
 Gibraltar Equip. & Mfg. Co.

**TIRES AND TUBES,  
OFF-HIGHWAY**

Firestone Tire & Rubber Co., The  
 Gates Rubber Co.

**Manufacturer's Complete Names and  
 Addresses are listed in Section II, last  
 pages of this yellow section.**



## Tools

General Petroleum Corp.  
Goodrich Co., R.F.  
Goodyear Tire & Rubber Co.  
Pure Oil Co.  
Roder Blackburn Intl. Corp.  
United States Rubber Intl.

## TOOLS, AIR DRIVEN-PORTABLE

### See also Drills, Rock

Air Placement Equip. Co.  
Air Place—see Air Placement Equip. Co.  
Atlas Diesel, A. B.  
ATLAS DIESEL, A. B. CATALOGUED ON PAGE WM 19-23 (WORLD MINING ONLY)  
CHICAGO PNEUMATIC TOOL CO., CATALOGUED ON PAGE 39  
COPCO PACIFIC, LTD., CATALOGUED ON PAGE 48  
GARDNER-DENVER CO., CATALOGUED ON PAGE 17  
INGERSOLL RAND CO., CATALOGUED ON PAGE 27, 233  
JOY MFG. CO., CATALOGUED ON PAGE 244, 261  
Le Roi Div.  
Lorantec—see Newage Intl., Inc.  
National Supply Co. (Pa.)  
Newage Intl., Inc.  
Penn Mach. Co.  
THOR POWER TOOL CO., CATALOGUED ON PAGE WM 97 (WORLD MINING ONLY)  
Westinghouse Air Brake Co., Le Roi Div.  
Worthington Corp.  
Wright—see Wright Power Saw & Tool Corp.  
Wright Power Saw & Tool Corp.

## TOOLS, INDUSTRIAL GUN

REMINGTON ARMS CO., INC., CATALOGUED ON PAGE 246

## TOOLS, OBSTRUCTION REMOVAL

REMINGTON INDUSTRIAL GUN—SEE REMINGTON ARMS CO.  
REMINGTON ARMS CO., CATALOGUED ON PAGE 244

## TORQUE CONVERTERS

### See Transmissions

## TRACK & ACCESSORIES

### RAIL AND TIES, STEEL

ALLISON STEEL MFG. CO., CATALOGUED ON PAGE 35  
Bethlehem Pacific Coast Steel Corp.  
Bethlehem Steel Corp.  
Bethlehem Steel Export Corp.  
C P & I—SEE COLORADO FUEL & IRON CORP., THE  
Central Frog & Switch Co., THE  
COLORADO FUEL & IRON CORP., THE, CATALOGUED ON PAGE 248, 261  
Coover Railroad Track Braco Co.  
Foster Co., L.B.  
Gomco Tru-Blo—see Gibraltar Equipment & Mfg. Co.  
Gibraltar Equipment & Mfg. Co.  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Johnson Mfg. Co.  
Manitoba Steel Foundries Ltd.  
Morris Bros. Machinery Co.  
Mosebach Electric & Supply Co.  
Reilly Car & Chem. Co.  
Republic Creosoting Co.  
Sweet's Steel Co.  
U.S. Industries, Inc.  
United States Steel Corp.

UNITED STATES STEEL EXPORT CO., CATALOGUED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
U. S. Steel Corp., Tennessee Coal & Iron Div.  
USS—see U.S. Steel Corp.  
West Virginia Steel & Mfg. Co.

## SWITCHES, FROGS, CROSSINGS, ETC.

ALDON—SEE THE ALDON COMPANY  
ALDON COMPANY, THE, CATALOGUED ON PAGE 125  
Alexander Car Replacer Mfg. Co.  
American Brake Shoe Co., Hamsage Ajax Div.  
AMERICAN MINE DOOR COMPANY, CATALOGUED ON PAGE 204, WM 115 (WORLD MINING ONLY)  
ATLAS CAR & MFG. CO., THE, CATALOGUED ON PAGE 239  
Bethlehem Pacific Coast Steel Corp.  
Bethlehem Steel Corp.  
Bethlehem Steel Export Corp.  
CARD IRON WORKS CO., THE, S., CATALOGUED ON PAGE 248, 267  
Central Frog & Switch Co., The  
Controller Block & Supply Co., Inc.  
Coover Railroad Track Braco Co.  
The  
EIMCO CORP., THE, CATALOGUED ON PAGE 221-224  
ELECTI-THRO—SEE AMERICAN MINE DOOR CO.  
General Equip. & Mfg. Co.  
Gibraltar Equipment & Mfg. Co.  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Hayes Track Appliances Co.  
Helmick Foundry-Machine Co.  
JIM CROW—SEE THE ALDON COMPANY  
Johnson Mfg. Co.  
Lamson & Sessions Co.  
Manitoba Steel Foundries Ltd.  
Miners Hardware Supply  
Morris Bros. Machinery Co.  
Mosebach Electric & Supply Co.  
Nolan Co., The  
Penn Machine Co.  
Pettibone-Mulliken Corp.  
RAMSON—THE ALDON CO.  
Sweet's Steel Co.  
Taylor-Wharton Iron & Steel Co.  
U.S. Industries, Inc.  
UNITED STATES STEEL EXPORT CO., CATALOGUED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
USS—see U.S. Steel Corp.  
U.S. Steel Corp.  
Utility Mines Equip. Co.  
Weir Kilby Corp.  
West Virginia Steel & Mfg. Co.  
Wrecking Frog—see Alexander Car Replacer Mfg. Co.

## TRACTORS & ATTACHMENTS

### TRACTORS

Agricut—see Pence & Co., Inc.  
Earl H.  
Allis-Chalmers Manufacturing Co., Tractor Div.  
American Tractor Equipment Corp.  
Autocar—see The White Motor Co., Autocar Div.  
Case Co., J. L.  
Caterpillar Tractor Co.  
EIMCO CORP., THE, CATALOGUED ON PAGE 221-224  
FWD—see Four Wheel Drive Auto Co., The  
Four Wheel Drive Auto Co., The  
Hough Co., The Frank G.  
INTERNATIONAL—SEE INTERNATIONAL HARVESTER EXPORT CO.  
INTERNATIONAL HARVESTER CO., CATALOGUED ON PAGE 6  
INTERNATIONAL HARVESTER EXPORT CO., CATALOGUED ON PAGE WM 6 (WORLD MINING ONLY)  
Klineker-Humboldt-Denta A. G.  
LeTourneau-Westinghouse Co.  
MACK TRUCKS, INC., CATALOGUED ON PAGE 61  
Minneapolis-Moline Co.  
Neal Machinery Co., E.T.  
Oliver Corp., The  
Pence & Co., Inc., Earl H.  
Power Equip. Co.  
Sheppard Co., R.H.  
Toumanian—see LeTourneau-Westinghouse Co.

Tractomotive Corp.  
Westinghouse Co., Le Tourneau  
White Motor Co., The, Autocar Div.  
Woodbridge Mfg. Co.

### ATTACHMENTS

Allied Steel & Tractor Products, Inc.  
Allis-Chalmers Manufacturing Co., Tractor Div.  
ALLOY STEEL & METALS CO., CATALOGUED ON PAGE 254  
AMERICAN BRAKE SHOE CO., AMER. MANGANESE STEEL DIV., CATALOGUED ON PAGE 23  
American Tractor Equipment Corp.  
AMSCO—SEE AMERICAN BRAKE SHOE CO.  
Atco—see American Tractor Equip. Corp.  
Baker Manufacturing Co., The  
Balderson Inc.  
BUCYRUS-ERIE—SEE INTERNATIONAL HARVESTER EXPORT CO.  
Carr—see Pacific Car & Foundry Co.  
Carroll Tractor Parts—see Craig Carroll Co.  
Case Co., J. L.  
Caterpillar Tractor Co.  
Continental Mfg. Co.  
Craig Carroll Co.  
Drott—see Drott Mfg. Corp.  
Drott Mfg. Corp.  
EIMCO CORP., THE, CATALOGUED ON PAGE 221-224  
ELECTRIC STEEL FOUNDRY CO., CATALOGUED ON PAGE 21  
Frustrant—see Frustrant Trailer Co.  
Frustrant Trailer Co.  
Gar Wood Industries Inc.  
Hales Co., Wm.  
Heil Co., The  
Hensley—see Hensley Equip. Co.  
Hensley Equip. Co.  
HOUGH—SEE INTERNATIONAL HARVESTER EXPORT CO.  
Hough Co., The Frank G.  
Hyster Co.  
INTERNATIONAL HARVESTER CO., CATALOGUED ON PAGE 6  
INTERNATIONAL HARVESTER EXPORT CO., CATALOGUED ON PAGE WM 6 (WORLD MINING ONLY)  
Kay-Runner Steel Prods., Inc.  
Kensington Steel Co.  
Manitoba Steel Foundries Ltd.  
Oliver Corp., The  
Pacific Car & Foundry Co.  
Pence & Co., Inc., Earl H.  
Power Equip. Co.  
PULLMAN—SEE INTERNATIONAL HARVESTER EXPORT CO.  
Roder-Blackburn Int. Corp.  
Silent Hoist & Crane Co.  
Shunk Mfg. Co.  
Skid-Shovel—see Drott Manufacturing Corp.  
Taylor-Wharton Iron & Steel Co.  
Vase-Grip—see Continental Mfg. Co.  
Tractomotive Corp.  
Union Chais & Mfg. Co.  
Webb Corp., The  
WESTINGHOUSE AIR BRAKE CO., CLEVELAND ROCK DRILL DIV., CATALOGUED ON PAGE 4  
Woodbridge Manufacturing Co.

## TRAILERS

### See Trucks and Trailers

## TRAMMERS

### See Locomotives

## TRAMWAYS, AERIAL

### BUCKETS

AMERICAN BRAKE SHOE CO., AMER. MANGANESE STEEL DIV., CATALOGUED ON PAGE 23  
Rodinson Mfg. Co.  
Columbia-Geneva—see United States Steel Corp., Columbia-Geneva Steel Div.  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Holmes & Bros., Inc.  
Morris Bros. Machinery Co.  
Neal Machinery Co., H. T.  
RIBLET TRAMWAY CO., CATALOGUED ON PAGE 128  
Sanford-Day Iron Works Inc.  
Telluride Iron Works Co.

U.S. Steel Corp., American Steel & Wire Div.  
United States Steel Corp., Columbia-Geneva Steel Div.  
UNITED STATES STEEL EXPORT CO., CATALOGUED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
Washington Iron Works  
Yara Engineering Corp., Interstate Equipment Div.

### CABLE

Rodinson Mfg. Co.  
British Ropes Ltd.  
Canada Wire & Cable Co., Ltd.  
Columbia-Geneva—see United States Steel Corp., Columbia-Geneva Steel Div.  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Holmes & Bros., Inc.  
LESCHEN WIRE ROPE DIV., H.K. PORTER CO., CATALOGUED ON PAGE 46  
Morris Bros., Machinery Co.  
RIBLET TRAMWAY CO., CATALOGUED ON PAGE 128  
Roehlings Sons Corp.  
SAUERMAN BROS., INC., CATALOGUED ON PAGE 116  
United States Steel Corp., Columbia-Geneva Steel Div.  
UNITED STATES STEEL EXPORT CO., CATALOGUED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
Washington Iron Works  
Yara Engineering Corp., Interstate Equipment Div.

### TOWERS

Rodinson Mfg. Co.  
Columbia-Geneva—see United States Steel Corp., Columbia-Geneva Steel Div.  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Holmes & Bros., Inc.  
RIBLET TRAMWAY CO., CATALOGUED ON PAGE 128  
SAUERMAN BROS., INC., CATALOGUED ON PAGE 116  
Telluride Iron Works  
United States Steel Corp., Columbia-Geneva Steel Div.  
UNITED STATES STEEL EXPORT CO.  
Yara Engineering Corp., Interstate Equipment Div.  
Washington Iron Works

## TRANSFERS, CAR

AMERICAN MINE DOOR COMPANY, CATALOGUED ON PAGE 204, WM 115 (WORLD MINING ONLY)  
Bodinson Mfg. Co.  
CANTON—SEE AMERICAN MINE DOOR COMPANY  
CARD IRON WORKS CO., THE C. S., CATALOGUED ON PAGE 244, 267  
EIMCO CORP., THE, CATALOGUED ON PAGE 221-224  
GREGG CO., LTD., THE, CATALOGUED ON PAGE 14, 15  
Enterprise Wheel & Car Corp.  
Irwin Engine Co., The  
Iron Foundry & Mine Car Co.  
MAYO TUNNEL MINE EQUIP., CATALOGUED ON PAGE WM 125 (WORLD MINING ONLY)  
Phillips Corp.  
Sanford-Day Iron Works Inc.  
UNITED STATES STEEL EXPORT CO., CATALOGUED ON INSIDE FRONT COVER (WORLD MINING ONLY)  
Webb Corp., The

## TRANSITS

### See Surveying Instruments & Equipment

## TRANSMISSIONS

## AND TORQUE CONVERTERS

See also Torque Converters  
American Blower Corp.  
Anderson-O'Brien Co.  
Berry—see Oliver-Iron & Steel Corp.  
Boston Gear Wks.  
Brad-Potter Gear Wks., Inc.  
Foster Bros. Gear & Mach. Corp.



Fuller Mfg. Co.  
G. M. C. Allison Div.  
GENERAL MOTORS OVERSEAS  
CORP., CATALOGUED ON  
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ING ONLY)  
Jones Foundry & Machine Co., W.A.  
Koppers Co., Fast's Coupling Dept.  
Lima Electric Motor Co.  
LINK-BELT—see LINK-BELT CO.  
LINK-BELT CO., CATALOGUED ON  
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ING ONLY)  
Lovejoy—see Lovejoy Flexible  
Coupling Co.  
Lovejoy Flexible Coupling Co.  
National—see National Supply Co.,  
The  
National Supply Co., The  
Oilgear Co., The  
Oliver Iron & Steel Corp.  
Reeves Pulley Co.  
Schneider—see Schneider Mfg. Corp.  
Schneider Mfg. Corp.  
Smith Power Transmission Co., The  
Sterling Electric Motors, Inc.  
Twin Disc Clutch Co.  
U. S. Electrical Motors, Inc.  
Varidrive—see U. S. Electrical  
Motors, Inc.  
Vickers, Inc.  
Western Gear Works  
Western Gear Works, Pacific Gear  
Plant

## TRIPPERS

See Conveyor Equipment

## TROLLEY EQUIPMENT

See also Locomotives

Anderson Mfg. Co., Albert & J. M.  
Chester—see National Screw & Mfg.  
Co., Chester Hoist Div.  
COLORADO FUEL & IRON CORP.,  
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Duquesne Mine Supply Co.  
Elreco Corp., The  
Flood-City—see Flood City Brass &  
Electric Co.  
Flood City Brass & Electric Co.  
Forker Co., The  
General Equip. & Mfg. Co.  
Hammond Co., J. V.  
Ironstone Engine Co., The  
JEFFREY MFG. CO., THE, CATA-  
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Lee-Norse Co.  
LINK BELT CO., CATALOGUED  
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MINING ONLY)  
Mosebach Electric & Supply Co.  
National Screw & Mfg. Co., Chester  
Hoist Div.  
Ohio Brass Co.  
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Hoist  
Reading Crane & Hoist  
WESTINGHOUSE ELECTRIC IN-  
TERNATIONAL CO., CATA-  
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(WORLD MINING ONLY)  
Whiting Corp.

## TROMMELS

See Screens, Grizzlies, and  
Accessories

## TRUCKS

See Cars, Mine

## TRUCK AND TRAILERS

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ALLISON STEEL MFG. CO.,  
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Autocar—see White Motor Co., The,  
Autocar Div.  
Beall Pipe & Tank Corp.  
Black Diamond—see Enterprise  
Wheel & Car Corp.  
Chrysler Corp., Dodge Div.  
Dart Truck Co.  
Dunlop Tyres, Inc.  
Enterprise Wheel & Car Corp.  
EUCLID DIV., GENERAL MOTORS  
CORP., CATALOGUED ON  
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F.A.B. Manufacturing Co.  
FWD—Four Wheel Drive Auto Co.,  
The  
Fubco—see F.A.B. Manufacturing  
Co.  
Federal Motor Truck Co.  
Four Wheel Drive Auto Co., The  
Fruehauf—see Fruehauf Trailer Co.  
Fruehauf Trailer Co.

Gallon Allsteel Body Co.  
Gate City Steel  
General Motors Corp., GMC Truck  
& Coach Div.  
Giant Mfg. Co.  
Gramm Trailer Corp.  
Hanson Clutch & Mach. Co.  
Hercules Steel Products Corp.  
Hockensmith Corp., The  
INTERNATIONAL—see INTER-  
NATIONAL HARVESTER EX-  
PORT CO.  
INTERNATIONAL HARVESTER  
CO., CATALOGUED ON PAGE 6  
INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGUED  
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MINING ONLY)  
Kay Brunner Steel Prod., Inc.  
Kenworth Motor Truck Corp.  
Klockner-Humboldt-Deutz Ag  
Kochring Co.  
LeCrosse Trailer Corp.  
Landis Steel Co.  
Lang Co., Inc.  
Mack Motor Truck Corp.  
MACK TRUCKS INC., CATA-  
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Oshkosh Motor Truck, Inc.  
Penn Body—see Hockensmith Corp.,  
The  
Rodgers Bros. Corp.  
Sterling Motors Corp.  
Transport Trailers, Inc.  
Truck Engr. Corp.  
White Motor Co., The  
Winter Weiss Co., The  
Wooldridge Mfg. Co.  
Yale and Towne Mfg. Co., Ma-  
terials Handling Div.

## OFF-HIGHWAY

ALLISON STEEL MFG. CO.,  
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Ather Products Corporation  
Autocar—see The White Motor Co.,  
Autocar Div.  
Beall Pipe & Tank Corp.  
Chrysler Corp., Dodge Div.  
Dart Truck Co.  
Dorsey Trailers, Inc.  
Easton—see Easton Car & Con-  
struction Co.  
Easton Car & Construction Co.  
Enterprise Engine & Mach. Co.  
EUCLID DIV., GENERAL MOTORS  
CORP., CATALOGUED ON  
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FWD—Four Wheel Drive Auto Co.,  
The  
Fubco—see F.A.B. Mfg. Co.  
Federal Motor Truck Co.  
Four Wheel Drive Auto Co., The  
Fruehauf—see Fruehauf Trailer Co.  
Fruehauf Trailer Co.  
Gallon Allsteel Body Co.  
Gate City Steel  
GENERAL MOTORS CORP., EU-  
CLID DIVISION, CATA-  
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GETTMAN BROTHERS, CATA-  
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Gramm Trailer Corp.  
Hanson Clutch & Mach. Co.  
Hercules Steel Prods. Corp.  
Hockensmith Corp., The  
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NATIONAL HARVESTER EX-  
PORT CO.  
INTERNATIONAL HARVESTER  
CO., CATALOGUED ON PAGE 6  
INTERNATIONAL HARVESTER  
EXPORT CO., CATALOGUED  
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MINING ONLY)  
Kay Brunner Steel Prod., Inc.  
Kenworth Motor Truck Corp.  
Kochring Co.  
LeCrosse Trailer Corp.  
Landis Steel Co.  
Lang Co., Inc.  
LeTourneau Westinghouse Co.  
MACK TRUCKS INC., CATA-  
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Oshkosh Motor Truck, Inc.  
Penn Body—see Hockensmith Corp.,  
The  
Rogers Brothers Corp.  
Terra Cobra—see Wooldridge Mfg.  
Co.  
Tourna Shopper—see LeTourneau-  
Westinghouse Co.  
Tourna Shopper—see LeTourneau-  
Westinghouse Co.  
Transport Trailers, Inc.  
Truck Engr. Corp.  
Webb Corp., The  
Westinghouse Co., LeTourneau  
White Motor Co., The Autocar Div.  
Winter Weiss Co., The  
Wooldridge Mfg. Co.  
Yale & Towne Mfg. Co.

## TRUCK OR TRAILER BODIES

ALLISON STEEL MFG. CO.,  
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Beall Pipe & Tank Corp.  
Dorsey Trailers, Inc.  
Easton Car & Construction Co.  
Enterprise Engine & Mach. Co.  
F. A. B. Mfg. Co.  
Gallon Allsteel Body Co.  
Garwood Industries Inc.  
Giant Mfg. Co.  
Hell Co., The  
Hercules Steel Prods. Corp.  
Hockensmith Corp., The  
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Lang Co., Inc.  
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loy Dept.  
Gibraltar Equipment & Mfg. Co.  
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Longyear Co., E. J.  
Manchester Bit Corp.  
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Metall Carbide Corp.  
Minerals Engr. Co.  
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American Chain & Cable Co., Inc.,  
R. P. & C. Valve Div.  
American Hard Rubber Co.  
American Locomotive Co.  
AMPCO Metal, Inc.  
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Asco—see Automatic Switch Co.  
Barrett, Haentjens & Co.  
Black, Sivalls & Bryson, Inc.  
Bristol Co., The  
Brown-Farley Co.  
Chase Brass & Copper Co.  
Cousor d'Alene Hardware & Foundry  
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Crane Co.  
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Philadelphia Gear Wks., Inc.  
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AXIVANE—see JOY MFG. CO.  
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chinery Corp.  
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Sintering Machinery Corp., Dwight Lloyd Div.  
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Spiral—see Flexible Tubing Corp.  
Stanley Co., Inc. William W.  
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Multimet—see Haynes Stellite Co.  
National Cylinder Gas Co.  
Nickel-Arc—see Alloy Rods Co.  
Phos-Trode—see AMPCO Metal, Inc.  
Reacite-Loy Co.  
Reverse Copper & Brass Inc.  
REXARC—see Slight Feed Generator Co.  
Resistal Stainless—see Crucible Steel Co. of Amer.  
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Stackpole Carbon Co.  
Stull-Sickles Co.  
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Taylor-Wharton Iron & Steel Co.  
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Round & Son, Inc., David  
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## SECTION II

# Manufacturer's Index

### Advertisers in Boldface

SECTION II contains an alphabetical list of the names and complete addresses of the principal manufacturers of specialized MINE-MILL-SMELTER equipment. The names of manufacturers who are repre-

sented in this issue by catalogs or advertisements are printed in **BOLDFACE** type, and the page numbers of their catalogs or advertisements are provided for your easy reference.

## A

**A & A Mfg. Co.**, 2017 W. Clybourn St., Milwaukee 3, Wis.  
**Abrams Aerial Survey Corp.**, 606 East Shiawassee St., Lansing 1, Mich.  
**A.C.F. Industries, Inc.**, 30 Church St., N.Y. 8, N.Y.  
**Aeco Electric Corp.**, 40 E. 49th St., N.Y. 17, N.Y.  
**ACKER DRILL CO., INC.**, 121 W. LACKAWANA AVE., SCRANTON 3, PA. ... 106  
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**Acme Drilling Service**, 833 Cleveland St., Oakland 6, Calif.  
**Acme Fishing Tool Co.**, Parkersburg, W. Virginia.  
**Acme Machinery Co.**, Box 1160, Williamson, W. Virginia.  
**Acme Tank Mfg. Co.**, 5400 S. Soto St., Los Angeles 11, Calif.  
**Acragage Corp.**, Wampus Lane, Milford, Conn.  
**Adam Cook's Sons, Inc.**, 8 N. Stiles St., Linden, N.J.  
**Advance Car Mover Co., Inc.**, 112 N. Outram St., Appleton, Wis.  
**Aero Service Corp.**, 210 E. Courtland St., Philadelphia 30, Pa.  
**Aerodyne Atlantic Corp.**, 44 Wall St., New York 5, N.Y.  
**AGENCE MINIERE & MARITIME S. A.**, 2 RUE VAN BREE, ANTWERP, BELGIUM  
**Ahlberg Bearing Co.**, 3025 W. 47th St., Chicago 32, Ill.  
**Ainsworth Wm. & Sons, Inc.**, 2151 Lawrence St., Denver 2, Colo.  
**Air Placement Equip. Co.**, 1009-11 W. 24th St., Kansas City 8, Mo.  
**Air Reduction Sales Co.**, 60 East 43rd St., New York 17, N.Y.  
**Ajax Flexible Coupling Co.**, Westfield, N.Y.  
**Albany Felt Co.**, 1373 Broadway, Albany, N.Y.  
**Alco Mfg. Co.**, 4011 Cuming St., Omaha 8, Nebraska  
**ALDON COMPANY, THE**, 3338 RAVENSWOOD AVE., CHICAGO 13, ILL. ... 125  
**Alexander Car Replacer Mfg. Co.**, 1405 Main Ave., Scranton 4, Pa.  
**All-State Welding Alloys Co., Inc.**, 340-43 Ferris Ave., White Plains, New York  
**Allegheny Ludlum Steel Corp.**, 2020 Oliver Bldg., Pittsburgh 22, Pa.  
**Allen-Bradley Co.**, 136 W. Greenfield, Milwaukee 4, Wis.  
**Allen & Garcia Co.**, 332 S. Michigan Ave., Chicago 4, Ill.  
**ALLEN-SHERMAN-HOFF PUMP CO., THE**, 259 E. LANCASTER AVE., WYNNWOOD, PA. ... INSIDE FRONT COVER  
**Allen Mfg. Co., W.D.**, 544 W. Lake St., Chicago 6, Ill.  
**Alliance Machine Co.**, Alliance, Ohio.  
**Allied Chemical & Dye Corp.**, Barrett Div., 40 Rector St., New York 6, N.Y.  
**Allied Chemical & Dye Corp.**, General Chemical Div., 40 Rector St., New York 6, N.Y.  
**Allied Coophysics, P.O.**, Box 283, San Jose, Calif.  
**Allied Steel Products Corp.**, 2100 N. Lewis, Tulsa, Okla.  
**Allied Steel & Tractor Products, Inc.**, 7835 Broadway, Cleveland 5, Ohio  
**Allis-Chalmers Mfg. Co.**, 935 E. 78th St., Milwaukee 1, Wis.  
**Allis-Chalmers Mfg. Co.**, The Buda Co., Harvey, Ill.  
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**Louis Allis Co., The**, 427 E. Stewart St., Milwaukee 7, Wis.  
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**Alloy Rods Co.**, Lincoln Highway West, York, Pa.  
**ALLOY STEEL & METALS CO.**, 1849 EAST 35TH ST., LOS ANGELES 38, CALIF. 254

**Alpha Wire Corp.**, 430 Broadway, N.Y. 10, N.Y.  
**Alphaduct Wire & Cable Co.**, P.O. Box 67, Milltown, N.J.  
**Aluminum Co. of America**, 1501 Alcoa Bldg., Pittsburgh 19, Pa.  
**American Agricultural Chem. Co.**, 50 Church St., N.Y. 7, N.Y.  
**American Air Filter Co.**, 215 Central Ave., Louisville 8, Ky.  
**American Blower Corp.**, Detroit 32, Mich.  
**American Brake Shoe Co.**, 239 Park Ave., New York 17, N.Y.  
**AMERICAN BRAKE SHOE CO., AMERICAN MANGANESE STEEL DIV.**, 389 E. 14TH ST., CHICAGO HEIGHTS, ILL. ... 23  
**American Brake Shoe Co., Ramapo Ajax Div.**, 109 North Wabash Ave., Chicago 2, Ill.  
**AMERICAN BRATTICE CLOTH CORP.**, 8 BUFFALO ST., WARSAW, IND. ... 104  
**American Car & Foundry Co.**, 30 Church St., New York, N.Y.  
**American Chain & Cable Co., Inc.**, American Cable Div., York, Pa.  
**American Chain & Cable Co., Inc.**, American Chain Div., Princess & Charles Sts., York, Pa.  
**American Chain & Cable Co., Inc.**, Hazard Wire Rope Div., Wilkes-Barre, Pa.  
**American Chain & Cable Co., Inc.**, R-P&C Div., Reading, Pa.  
**American Chain & Cable Co., Inc.**, Wire Rope Div., 271 S. Pennsylvania Ave., Wilkes-Barre, Pa.  
**American Chain & Cable Co., Inc.**, Wright Hoist Div., York, Pa.  
**American Coldset Corp.**, 57-59 Court St., Paterson, N.J.  
**American Cyanamid Co., Explosives Dept.**, 30 Rockefeller Plaza, New York 20, N.Y.  
**AMERICAN CYANAMID CO., MINERAL DRESSING DEPT.**, 30 ROCKEFELLER PLAZA, NEW YORK 20, N.Y. ... 244-245  
**American Diamond Drill Co.**, 1976 S. Second West, Salt Lake City, Utah  
**American Engr. Co.**, Cumberland & Aramingo Aves., Philadelphia, Pa.  
**American Hard Rubber Co.**, 93 Worth St., New York 13, N.Y.  
**American Hoist & Derrick Co.**, 63 S. Robert St., St. Paul 1, Minn.  
**American Instrument Co., Inc.**, Silver Spring, Maryland  
**American-LaFrance-Fomrite Corp.**, 148 E. LaFrance St., Elmira, New York  
**American Locomotive Co.**, 30 Church St., N.Y. 10, N.Y.  
**American Lumber & Treating Co.**, 352 S. Michigan Ave., Chicago 4, Ill.  
**American Mach. & Metals Inc.**, Clymer Ave., Sellersville, Pa.  
**American Mfg. Co.**, 63 West St., Brooklyn 22, N.Y.  
**American Marsh Pumps, Inc.**, 60 Capitol Ave., Battle Creek, Mich.  
**American Mason Safety Tread Co.**, Lowell, Mass.  
**American Metal Moulding Co.**, 146 Colt St., Irvington, N.J.  
**AMERICAN MINE DOOR CO.**, 2071 DUEBER AVE., CANTON 6, OHIO, 294, WM 115 (WORLD MINING ONLY)  
**American Optical Co.**, Southbridge, Mass.  
**American Potash & Chemical Corp.**, 8050 W. 6th St., Los Angeles 54, Calif.  
**The American Pulley Co.**, 4200 Wissahickon Ave., Philadelphia 29, Pa.  
**American Pulverizer Co.**, 1249 Macklind Ave., St. Louis 18, Mo.  
**AMERICAN RUBBER MFG. CO.**, 1145 PARK AVE., OAKLAND, CALIF. ... 16  
**AMERICAN SMELTING & REFINING CO.**, 5250 S. STATE & MC CORMICK BLDG., SALT LAKE CITY, UTAH ... 115  
**American Steel Dredge Co., Inc.**, 2511 Taylor St., Ft. Wayne, Ind.  
**American Tractor Equipment Corp.**, 9151 San Leandro Blvd., Oakland 4, Calif.  
**American Ventilating Hose Co.**, 18 Park Row, New York 7, N.Y.  
**American Water Softener Co.**, Lehigh Ave. & Fourth St., Philadelphia 33, Pa.  
**American Well Wks.**, 100 N. Broadway, Aurora, Ill.

**American Wheelabrator & Equipment Corp.**, 620 S. Byrkit St., Milwaukee, Ind.  
**AMERICAN ZINC, LEAD & SMELTING CO.**, 1639 PAUL BROWN BLDG., ST. LOUIS, MISSOURI ... 82  
**Ampco Metal, Inc.**, 1716 South 35th St., Milwaukee 46, Wis.  
**Anaconda Copper Mining Co.**, 33 Broadway, N.Y. 4, N.Y.  
**Anaconda Wire & Cable Co.**, 23 Broadway, New York City 4, N.Y.  
**Anderson Mfg. Co.**, Albert & J.M. 1269 A St., Boston 10, Mass.  
**Anderson-O'Brien Co.**, 746 E. Washington Blvd., Los Angeles 21, Calif.  
**The Ansonia Wire & Cable Co.**, 63 Main St., Ansonia, Conn.  
**Ansel Chem. Co.**, Marinette, Wis.  
**Apache Powder Co.**, Box 518, Benson, Arizona  
**Appleton-Atlas Car Mover Corp.**, 1421-25 B. 2nd St., Milwaukee 4, Wisconsin  
**Arco Corp.**, 1500 E. 50th St., Philadelphia 43, Pa.  
**Arizona Assay Office**, 815 N. First St., Phoenix, Ariz.  
**ARIZONA TESTING LABORATORIES**, 817 WEST MADISON ST., P.O. BOX 1888 PHOENIX, ARIZ. ... 123  
**Armo Drainage & Metal Products, Inc.**, 703 Curtis St., Middletown, Ohio  
**Armo Steel Corp.**, 703 Curtis St., Middletown, Ohio  
**Armour Chemical Division**, 1355 West 31st St., Chicago 9, Ill.  
**Armstrong-Bray & Co.**, 5364 Northwest Highway, Chicago 30, Ill.  
**Arrow Tank Co., Inc.**, 16 Barnett St., Buffalo 15, N.Y.  
**Asbestos Mfg. Co.**, Sabine St., Huntington, Ind.  
**Ashland Oil & Refining Co.**, Freedom, Pa.  
**Assembly Products, Inc.**, Chesterland, Ohio  
**Associated Research Inc.**, 3750 W. Belmont Ave., Chicago 18, Ill.  
**Athey Products Corp.**, 5621 West 65th St., Chicago 33, Ill.  
**Atlantic Refining Co.**, The, 268 South Broad St., Philadelphia 3, Pa.  
**Atlantic Tank Corp.**, 1207 Tonnelle Ave., North Bergen, N.J.  
**ATLAS CAR & MFG. CO., CLEVELAND 10, OHIO** ... 239  
**Atlas Chain & Mfg. Co.**, Dovietown, Pa.  
**ATLAS DIESEL**, A. B., 30, STICKHOLM I., SWEDEN, WM 29, 31, 32 (WORLD MINING ONLY)  
**Atlas Powder Company**, Wilmington 90, Delaware  
**Atomic Research Corp.**, 1405 Menita Rd., Box 205, Colorado Springs, Colo.  
**Aurora Pump Co.**, 94 Loucks St., Aurora, Ill.  
**Auror Electric Co.**, 54-20 45th St., L.I.C. 1, N.Y.  
**AUTO ARC-WELD MFG. CO., THE**, 9615 MEECH AVE., CLEVELAND 5, OHIO, WM 237 (WORLD MINING ONLY)  
**Autocar Division of the White Motor Co.**, Ardmore, Pa.  
**Automatic Electric Sales Corp.**, 1033 W. Van Buren St., Chicago 7, Ill.  
**Automatic Switch Co.**, 591 Lakewood Ave., Orange, N.J.

## B

**THE BARCOCK & WILCOX CO.**, 161 EAST 42ND ST., NEW YORK 17, N.Y. ... 199  
**Bacon-Greene & Milroy, P.O.**, Box 843, Hamden, Conn.  
**Bacon-Pietech Co., Inc.**, 75 N. Maple, Ridge-wood, N.J.  
**Bader Fire Extinguisher Co.**, 624 Somerville, Somerville, Mass.  
**Bailey Meter Co.**, 1050 Ivanhoe Road, Cleveland 10, Ohio  
**The Baker Mfg. Co.**, 10th & Stanford Ave., Springfield, Ill.  
**Baker Chem. Co., J.T.**, Phillipsburg, N.J.



Baker-Bonham Co., Industrial Truck Div., 1540 W. 80th St., Cleveland 2, Ohio  
 Balderson, Inc., Kansas  
 Bolder Electric Co., 4551-57 Dunsmuir St., St. Louis 18, Mo.  
 Baldwin-Lima-Hamilton Corp., Dept. 0048, Philadelphia 42, Pa.  
 Baldwin-Lima-Hamilton Corp., Edgewater Div., Philadelphia 42, Pa.  
 BALDWIN-LIMA-HAMILTON CORP., LIMA-HAMILTON DIV., PHILADELPHIA 42, Pa.  
 BAND IT CO., 2500 WALNUT ST., DENVER 5, COLO.  
 Barber-Greene Co., 400 North Highland Ave., Aurora, Illinois  
 Bares Mfg. Co., 500 Hough St., Barrington, Illinois  
 Barkley Electric Mfg. Co., 1005 Columbia Ave., Middletown, Ohio  
 Barnes Mfg. Co., 651 N. Main St., Mansfield, Ohio  
 Barnett, Macintosh & Co., Hamilton, Pa.  
 Bertell, A.O., 365 Woodlark Bldg., Portland, Ore.  
 Bath Iron Works Corp., Rm. 1738, West Chester, Pa.  
 Busch & Lomb Optical Co., 602 St. Paul St., Rochester, New York  
 Bay City Shovel, Inc., Bay City, Mich.  
 Bay State Abrasive Prod. Co., Westboro, Mass.  
 Bayonne Bolt Corp., 92 West St., N.Y. 6, N.Y.  
 Beach & Company, 131 E. Eighth St., Leadville, Colo.  
 Beall Pipe & Tank Corp., 13005 N. Burgard St., Portland 8, Ore.  
 Beaumont Hirth Co., 1505 Race St., Philadelphia 2, Pa.  
 Beckman Instruments, Inc., 820 Mission St., South Pasadena, Calif.  
 Beebe Bros., 1724 Sixth Ave., Seattle 4, Wash.  
 The Belmont Packing & Rubber Co., Butler & Seppia Sts., Philadelphia 97, Pa.  
 Benish Bros. Bag Co., 111 North Fifth St., Box 23, St. Louis 3, Mo.  
 Bendelari, F.M., Joplin, Mo.  
 Benjamin Electric Mfg. Co., Des Plaines, Ill.  
 Bennett Chemical Laboratory, Inc., 901 E. Ninth Street, Tacoma 3, Wash.  
 Bergen Wire Rope Co., Greig St., Lodi, N.J.  
 Berger & Sons, Inc., C.L., 97 Williams St., Boston 19, Mass.  
 F. W. Berk & Co., Inc., 55 New Montgomery St., San Francisco 5, Calif.  
 Berk & Co., Inc., F.W., Wood Ridge, N.J.  
 Berman Chem. Co., 712 Superior St., Toledo 4, Ohio  
 Bethlehem Foundry & Machine Co., W. Second St., Bethlehem, Pa.  
 Bethlehem Pacific Coast Steel Corp., 304th & Illinois Streets, San Francisco, California  
 Bethlehem Steel Co., Bethlehem, Pa.  
 Bethlehem Steel Export Corp., 25 Broadway, N.Y. 4, N.Y.  
 BICO, INC., 3116 VALHALLA DRIVE, BURBANK, CALIF.  
 Biddle Co., James G., 1816 Arch St., Philadelphia 7, Pa.  
 BIF Industries, Inc., Builders Providence Div., Providence, R.I.  
 BIF Industries, Inc., Proportioners Div., Providence, R.I.  
 Bin-Dicator Co., The, 18946 Knechtel Ave., Detroit 15, Mich.  
 Bingham Pump Co., 3800 N.W. Front St., Portland 10, Ore.  
 Binks Mfg. Co., 3114 Carroll Ave., Chicago 12, Ill.  
 Bird Machine Co., South Walpole, Mass.  
 Birdshore Steel Foundry & Machine Co., Birdshore, Pa.  
 Birby-Elmer Engineering Co., 981 Abington St., Galveston, Ill.  
 BLACK & DEASON, BOX 1888 SALT LAKE CITY 1, UTAH  
 Black & Decker Mfg. Co., The, Towson 4, Md.  
 Black Diamond Spad Co., 200 Berkshire Road, Richmond 21, Va.  
 Black, Stralls & Bryna, Inc., 7500 E. 12th St., Kansas City 16, Mo.  
 Blackhawk Mfg. Co., 3225 W. Rogers, Milwaukee 48, Wis.  
 Blaw-Knox Co., Blaw-Knox Div., Farmers Bank Bldg., Pittsburgh, Pa.  
 J. G. Blount Co., 10 Woodland St., Everett, Mass.  
 Blom-M-Electric Co., 150th & Chatham St., Blue Island, Ill.  
 Bodison Mfg. Co., 2401 Bayshore Blvd., San Francisco 14, Calif.  
 Bonded Scale & Machine Co., 69 Kingston, Columbus, Ohio  
 Bone Dry Shoe Mfg. Co., 2113 Pacific Ave., Tacoma, Wash.  
 Booth Engineers, 148 South West Temple St., Salt Lake City 1, Utah  
 Booth Co., Inc., 393 W. 14th St., Salt Lake City 4, Utah  
 Boston & Lockport Block Co., Inc., Corder St., E. Boston 22, Mass.  
 Boston Gear Works, Quincy 71, Mass.  
 Boston Hose & Rubber Co., P. O. Box 1971, Boston 3, Mass.  
 The Bowell Co., Boylan Ave., S. E. Canton, Ohio  
 Bowman-Durham-Robbins, Inc., 607 Bargon St., Brooklyn 33, N.Y.  
 BOYLES BROS. DRILLING CO., 1231 S.

MAIN ST., SALT LAKE CITY, UTAH  
 BOYLES BROS. DRILLING CO., LTD., 1275-81 PARKER ST., VANCOUVER 6, B.C., CANADA  
 Brabender Corp., Roselle Park, N.J.  
 Bradford Mach. Tool Co., 607 Evans St., Cincinnati 4, Ohio  
 Brad Foot Co., Wm., Inc., 1200 S. Cicero Ave., Cicero 50, Ill.  
 Bradley Pulverizer Co., 123 S. Third St., Allentown, Pa.  
 Braun Corp., 2240 E. 15th St., Los Angeles 21, Calif.  
 Braun-Knecht-Heiman Co., 1400 10th St., San Francisco 19, Calif.  
 Brown Corp., Inc., 700 Liberty Ave., Union, N.J.  
 Bridgeport Brass Co., 30 Grand St., Bridgeport, Conn.  
 Bridgeport Fittings, Inc., 200 Center St., Bridgeport, Conn.  
 Briggs & Stratton Corp., 2711 North Thirtieth St., Milwaukee 1, Wis.  
 Bright Star Industries, 600 Getty Ave., Clifton, N.J.  
 Bristol Co., The, Waterbury 20, Conn.  
 British Rope Ltd., Carr Hill, Blaby, Doncaster, Yorkshire, England  
 Brodbeck & Bacon Rope Co., 4203 Union Rd., St. Louis, Mo.  
 Brooks Lumber Co., Box 153, Ballingham, Wash.  
 Brookville Locomotive Works, Dayton 21, Brookville, Pa.  
 Brown Co., 153 Canaway St., Boston 14, Mass.  
 Brown Eng. Co., 125 N. 2nd St., Reading, Pa.  
 Brown Co., Inc., 1770 Dix Ave., Detroit 9, Mich.  
 Brown-Fayro Co., 940 Ash St., Johnstown, Pa.  
 Browning Mfg. Co., Mayville, Ky.  
 Brushing Co., Inc., Chas., 4700 W. Montrose, Chicago 12, Ill.  
 Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill.  
 Brunson Instrument Co., 1405 Walnut, Kansas City 6, Mo.  
 Bryant Electric Co., Box D, Barnum Station, Bridgeport 2, Conn.  
 Busyrus-Erie Co., P.O. Box 56, South Milwaukee, Wis.  
 Buda Co., (Div. of Allis-Chalmers Mfg. Co.), Harvey, Ill.  
 Buell Engineering Co., Inc., 70 Pine St., New York 5, New York  
 Buff & Buff Mfg. Co., Jamaica Plain, Boston, Mass.  
 Buffalo Forge Co., 400 Broadway, Buffalo, N.Y.  
 Buffalo Gasoline Engine Service, 287 E. Street Rear, Buffalo 7, N.Y.  
 Buffalo Scale Co., Inc., 45 Letchworth St., Buffalo 13, N.Y.  
 Buffalo Wire Wks. Co., 320 Terrace St., Buffalo 2, N.Y.  
 Bullard Co., E. D., 275 9th St., San Francisco 3, Calif.  
 BUNKER HILL & SULLIVAN MINING & CONCENTRATING CO., BOX 29, KELLOGG, IDAHO  
 Burroughs Battery Co., Foot of Exchange St., Westport, Ill.  
 Burrill Corp., 2223 Fifth Ave., Pittsburgh 19  
 Busman Mfg. Co., University at Jefferson, St. Louis 8, Mo.  
 Butler Mfg. Co., 19th & Eastern Ave., Kansas City 3, Mo.  
 Byron Jackson Co., P.O. Box 2017, Terminal Annex, Los Angeles, Calif.

C  
 C-A Wood Preserver Co., 6225 Delmar Blvd., St. Louis 6, Mo.  
 C & D Bederies, Inc., Conshohocken, Pa.  
 Cabot Inc., Samuel, 141 Milk St., Boston, Mass.  
 Caldwell Co., W. E., 2740 Brook St., Louisville 8, Ky.  
 California Testing Laboratories, Inc., 519 E. Washington Blvd., Los Angeles 15, California  
 California Texas Oil Co., Ltd., 380 Madison Ave., New York, N.Y.  
 Calumet & Hecla, Inc., Calumet Div., Calumet, Mich.  
 Cambridge Wire Cloth Co., Cambridge, Maryland  
 Canada Wire & Cable Co., Ltd., P. S. "R," Toronto 17, Ontario, Canada  
 Canadian Safety Fuse Co. Ltd., Brownsburg, Quebec, Canada  
 Carbolineum Wood Preserving Co., 536 W. Highland Ave., Milwaukee 3, Wis.  
 Car Bone Corp., 480 Myrtle Ave., Bonton, N.J.  
 Carborundum Co., The, Refractories Div., Perth Amboy, N.J.  
 CARD IRON WORKS CO., THE C. S., P.O. BOX 117, DENVER 1, COLO.  
 Cardex Corp., 307 N. Michigan Ave., Chicago, Ill.  
 Carey Mfg. Co., The Philip, Cincinnati 12, Ohio  
 Caryille Laboratories, Inc., R. P., 117 Liberty St., New York 6, N.Y.  
 Carlen Products Corp., 16225 Meach Ave., Cleveland 4, Ohio  
 Carville Rubber Co., Inc., 64 Park Place, New York 7, N.Y.

Carpenter Steel Co., 101 W. Bern St., Reading, Pa.  
 Carrier Corp., Carrier Bldg., Rochester, N.Y.  
 Carrier Conveyor Corp., 2144 Frankfort Ave., Louisville, Ky.  
 Case Co., J. L., 700 State St., Racine, Wisc.  
 Caterpillar Tractor Co., Peoria, Illinois  
 CENTRAL GUN CO., ALLENTOWN, PA.  
 Central Frog & Switch Co., The, Box 95, Sta. O., Cincinnati 4, Ohio  
 Central Mine Equipment Co., 6200 N. Broadway, St. Louis 15, Mo.  
 Central Mine Supply Co., 218-224 South 3rd St., Mt. Vernon, Ill.  
 Central Scientific Co., 1700 Irving Park Road, Chicago 12, Ill.  
 Central Scientific Co. of California, 1040 Martin Ave., Santa Clara, Calif.  
 Centrifugal & Mechanical Industries, Inc., 148 President St., St. Louis 15, Mo.  
 Century Electric Co., 1806 Pine St., St. Louis 3, Mo.  
 Chain Belt Co., 4701 West Greenfield Ave., Milwaukee 1, Wis.  
 Chain Belt Co., Baldwin-Duckworth Div., 340 Plainfield St., Springfield 2, Mass.  
 Chain Belt Co., Shaffer Bearing Div., Downers Grove, Illinois  
 Champion Diamond Co., 325 East 45th St., New York 17, N.Y.  
 Champion Lamp Works, 400 Broad St., Lynn, Mass.  
 Channon Corp., J. H., 1447-55 West Hubbard St., Chicago 22, Ill.  
 Chapman & Wood, 534 Jefferson St., N. E. Albuquerque, New Mex.  
 Charlton Laboratories, 2340 S. W. Jefferson St., Portland 7, Ore.  
 Chase Brass & Copper Co., 236 Grand St., Waterbury 20, Conn.  
 John Chatillon & Sons, 55 CHH St., New York 23, N.Y.  
 Chattanooga Machine Co., 1000 Watkins St., Chattanooga 4, Tenn.  
 Chemalloy Electronics Corp., Santee, Calif.  
 Chester Cable Corp., Oakland Ave., Chester, N.Y.  
 Chicago-Alfie Mfg. Co., 125 N. Green St., Chicago 7, Ill.  
 Chicago Bridge & Iron Co., 165 Broadway, New York, N.Y.  
 Chicago Eye Shield Co., 2300 Warren Blvd., Chicago 12, Ill.  
 Chicago Gear Mfg. Co., 2821 W. Fulton St., Chicago 12, Ill.  
 Chicago Perforating Co., 2445 W. 24th Pl., Chicago 8, Ill.  
 CHICAGO PNEUMATIC TOOL CO., 6 EAST 44TH ST., NEW YORK, N.Y.  
 Chicago Pulley & Shafting Co., 23 North Desplains St., Chicago 6, Ill.  
 Chicago Wheel & Mfg. Co., 1101 W. Monroe St., Chicago 7, Ill.  
 CHIRMAN CO., 339 N. POMONA AVE., BREA, CALIF.  
 Christensen Diamond Products Co., 1937 South Second West, Salt Lake City, Utah  
 Christian Engineers, J.D., 480 Potrero Ave., San Francisco 10, Calif.  
 Christiansa Mach. Co., Christiansa, Pa.  
 Chrysler Corp.-Dodge Div., 11500 Mound Road, Detroit 31, Mich.  
 Cincinnati Electrical Tool Co., Madison & Edwards Rd., Cincinnati, Ohio  
 Cincinnati Rubber Co., Crown Ave., Norwood 12, Ohio  
 Clifton Service Oil Co., Sixty Wall Tower, N.Y. 5, N.Y.  
 Clark Bros. Co., Olean, N.Y.  
 Clark Controller Co., The, 1146 E. 162nd St., Cleveland 10, Ohio  
 Clark Electronic Labs., Box 165, Palm Springs, Calif.  
 Clark Equipment Co., Construction Machinery Div., Benton Harbor, Mich.  
 Clarkson Co., The, 564 Market St., San Francisco 4, Calif.  
 Clarkson Mfg. Co., Mine Rd., Nashville, Ill.  
 Cleveland Crane & Engr. Co., Wickliffe, Ohio  
 CLEVELAND ROCK DRILL DIV., WESTINGHOUSE AIR BRAKE CO., CLEVELAND, OHIO  
 Cleveland Vibrator Co., The, 2223 Clinton Ave., Cleveland 13, Ohio  
 Cleveland Wire Cloth & Mfg. Co., 3073 E. 78th St., Cleveland 5, Ohio  
 Cleveland Worm & Gear Co., The, 3240 East 30th St., Cleveland 4, Ohio  
 Climax Engine & Pump Mfg. Co., 268 South La Salle St., Chicago 4, Ill.  
 Climax Molybdenum Co., 500 Fifth Ave., N.Y. 26, N.Y.  
 Clipper Belt Lacer Co., 974 Front Ave., N.W., Grand Rapids 3, Mich.  
 Clipper Mfg. Co., 2500 Warwick, Kansas City 8, Mo.  
 Clow & Sons, James B., 201-299 N. Talmage Ave., Chicago 12, Ill.  
 Clyde Iron Works, Inc., Duluth 1, Mich.  
 COAST MFG. & SUPPLY CO., BOX 71, LIVERMORE, CALIF.  
 Coast Metals, Inc., 201 Redneck Ave., Little Ferry, N.J.  
 Coates Steel Products Co., P. O. Box 188, Greenville, Ill.  
 Cour d'Alone Hardware & Foundry Co., Box 988, Wallace, Idaho  
 Coddling Hotel Co., 600 Walters St., Danville, Ill.



Colman Instruments, Inc., 318 Madison St., Maywood, Ill.  
 Collier Insulator Wire Co., 245 Roosevelt Ave., Pawtucket, R.I.  
**COLORADO ASSAYING CO., THE, 2913 WELTON ST., DENVER 1, COLO. ... 123**  
**COLORADO FUEL & IRON CORP., P.O. BOX 1238, DENVER, COLO. .... 246, 241**  
**COLORADO IRON WORKS CO., 1634 17TH ST., DENVER 2, COLO. .... 245, 249**  
 Columbia Electric Mfg. Co., 4515 Hamilton Ave., Cleveland 14, Ohio  
 Columbia Steel Casting Co., Inc., 923 N. W. Johnson St., Portland 8, Ore.  
**COLUMBIAN STEEL TANK CO., 1900 WEST 19TH ST., KANSAS CITY 1, MO. .... 79**  
 Columbus Conveyor Co., 889 W. Goodale Blvd., Columbus 8, Ohio  
 Columbus McKinnon Chain Corp., Chisholm Moore Hotel Div., Tonawanda, N.Y.  
 Combustion Engineering-Superheaters, Inc., Raymond Pulverizer Div., 1223 N. Branch St., Chicago 22, Ill.  
 Conestoga Engineering, Inc., 290 Madison Ave., New York 17, N.Y.  
 Compton, Inc., Box 1948, Clarkburg, W. Va.  
 Commercial Shearing & Stamping Co., 1775 Logan Ave., Youngstown 1, Ohio  
 Conoco Eng. Wks., Conkey & Co., Div., Mendota, Ill.  
 Concordia Electric Co., 1221 Sawmill Run Blvd., Pittsburgh 10, Pa.  
 Condenser Service & Engr. Co., Inc., 150 Absolver Highway, Hoboken, N.J.  
 Connecticut Telephone & Electric Corp., Meriden, Conn.  
 Connelville Mfg. & Mine Supply Co., 8 4th St., Connelville, Pa.  
 Consolidated Chimney Co., 8 S. Dearborn St., Chicago 8, Ill.  
 Construction Mach. Co., Box 120, Waterloo, Iowa  
 Continental Battery Mfg. Corp., 1901 Central Express, Dallas, Tex.  
 Continental Diamond Fibre Co., Newark, Delaware  
 Continental Drilling Co., 323 W. 4th St., Los Angeles 14, Calif.  
 Continental Electric Co., Inc., 325 Ferry St., Newark 5, N.J.  
 Continental Gin Co., Industrial Div., 4800-8th Ave., Seattle, Birmingham, Ala.  
 Continental Mfg. Co., Box 933, Kufort, Texas  
 Continental Motors Corp., Curline Bldg., Detroit, Mich.  
 Continental Rubber Wks., 1959 Liberty St., Erie, Pa.  
 Control Engr. Corp., Controls Div., 934 Washington St., Norwood, Mass.  
 Controller Block & Supply Co., Inc., P.O. Box 1418, Huntington 15, W. Va.  
 Convair, Inc., 714 Brookline Blvd., Pittsburgh 26, Pa.  
 Conveyor Co., The, 5260 East Siemon Ave., Los Angeles 24, Calif.  
 Co-operative Utilities Co., Inc., Mulberry St., Philadelphia, Pa.  
 Cooper-Bussmer Corp., The, Mount Vernon, Ohio  
 Coover Railroad Trunk Brace Co., The, P. O. Box 254, Dayton 1, Ohio  
**COPCO PACIFIC LTD., 299 BRITTAN AVE., SAN CARLOS, CALIF. .... 63**  
 Copper Weld Steel Co., Wire & Cable Div., Glassport, Pa.  
 Coppus Engineering Corp., 563 Park Ave., Worcester 2, Mass.  
 Corhart Refractories Co., 1600 West Lee St., S. Louisville 19, Kentucky  
**COSMOPOLITAN SALES CO., SUITE 1045M, 450 SEVENTH AVE., NEW YORK 1, N.Y. .... 128**  
 Cover, H. S., 3905 S. Michigan St., South Bend 14, Indiana  
**COWIN & CO., INC., 1-S.W. 18TH ST., BIRMINGHAM, ALABAMA .... 123**  
 Craig Carroll Co., 1794 E.E. 23rd Ave., (Box 2208), Portland 15, Oregon  
 Crane Co., 836 S. Michigan Ave., Chicago 5, Ill.  
 Crane Hoist Engr. Co., Bell, Calif.  
 Crescent Belt Fastener Co., 480 Lexington Ave., New York 17, N.Y.  
 Crichton Co., 1006 U. S. Nat'l Bank Bldg., Johnstown, Pa.  
 Crucible Steel Co. of America, Henry W. Oliver Bldg., P.O. Box 88, Pittsburgh 30, Pa.  
 Cullen-Tristeadt Co., 1380 S. Kilbourn Ave., Chicago 23, Ill.  
 Callman Wheel Co., 1544 W. Altgeld St., Chicago 14, Ill.  
 Cummins Engine Co., Inc., Fifth & Union St., Columbus, Ind.  
 Curtis Mfg. Co., Pneumatic Mach. Div., 1905 Kintlen Ave., St. Louis 20, Mo.  
 Curtis Lighting, Inc., 6135 W. 55th St., Chicago 38, Ill.  
 Custom Amay Office, Box 311, El Paso, Texas  
 Outler-Hammer, Inc., 1410 W. St. Paul Ave., Milwaukee 1, Wis.

## D

D-A Lubricant Co., W. 29th St. & The Canal, Indianapolis, Ind.  
 Dagley Mfg. Co., 1217 East 9th St., Joplin, Mo.

Dart Truck Co., 2823 Oak St., Kansas City 2, Mo.  
 Darrowth Inc., Caprinal Div., 23 S. Hopmeadow St., Simsbury, Conn.  
 Daseo Chem. Co., Inc., 1002 Thames St., Baltimore 31, Md.  
 Davenport Dealer Corp., 2305 Rockingham Road., Davenport, Iowa  
 Davey Compressor Co., Kenton, Ohio  
 Davis Foundry & Machine Works, Rome, Ga.  
 Davis Instrument Mfg. Co., Inc., 512 E 28 St., Baltimore 18, Md.  
 Davis, Nelson L., Co., 343 S. Dearborn St., Chicago 4, Ill.  
 Dayton Rubber Co., Woodside Bldg., Greenville, S. C.  
 Deason & Nichols, 160 South West Temple St., Salt Lake City 1, Utah  
**DEGGENDORFER, T. G., BOX 949, KELLOGG, IDAHO .... 122**  
**DEISTER CONCENTRATOR CO., FORT WAYNE, IND. .... 245, 244, 245**  
 Deister Machine Co., 1993 E. Wayne St., Ft. Wayne 4, Ind.  
 Deltron Electric Prod. Inc., N. Margarette St., Edinburg, Pa.  
 Deming Co., Salem, Ohio  
 Dempster Bros., Inc., Sprindale Ave. at Southern R.R., Knoxville 17, Tenn.  
**DENVER EQUIPMENT CO., Box 5248 (1446-17TH ST.), DENVER 17, COLO. .... 123**  
**INSIDE BACK COVER**  
 Denver Fire Clay Co., 2301 Blake St., P.O. Box 5816, Denver 17, Colorado  
 Despatch Oven Co., 619 S.E. Eighth St., Minneapolis, Minn.  
 Detection Corp., 5528 Vineland Ave., North Hollywood, Calif.  
 Detroit Belt Lacer Co., 3045-51 A St., Detroit 14, Mich.  
 Detroit Hoist & Machine Co., 2224 Morrow St., Detroit 11, Mich.  
 DeLaval Steam Turbine Co., 300 Nottingham Way, Trenton 2, N. J.  
 DeWalt Inc., Fountain Ave., Lancaster, Pa.  
 Diamond Tool Research Co., Inc., 402 Kentucky Ave., Indianapolis, Ind.  
 Diamond Drill Carbon Co., 244 Madison Ave., New York 16, N. Y.  
 Diamond Drilling Contracting Co., P.O. Box 4945, Station B, Spokane, Washington  
 Diamond Iron Works Co., 1728 N 2nd St., Minneapolis, Minn.  
 Diamond Mfg. Co., W. Eighth St., Wyoming, Pennsylvania  
 Diamonds Prod. Inc., 833 Prospect St., Elyria, Ohio  
 Diamond Tool Research Co., Inc., 880 2nd Ave., N.Y. 10, N.Y.  
 Dick, R. & J. Co., Inc., Passaic, New Jersey  
**DICKINSON LABORATORIES, 1300 W. MAIN ST., EL PASO, TEXAS .... 123**  
 Diehl Mfg. Co., 1198 Flinder Ave., Somerville, N.J.  
 Dieters Co., Harry W., 9330 Roselawn Ave., Detroit 4, Ohio  
 Dietsgen Co., Eugene, 2425 North Sheffield, Chicago, Ill.  
**DIFFERENTIAL STEEL CAR CO., FINDLAY, OHIO .... 74**  
**DINGS MAGNET SEPARATOR CO., 4749 WEST ELECTRIC AVE., MILWAUKEE 48, WIS. .... 12**  
 Dixon Crucible Co., Joseph, 167 Wayne St., Jersey City 3, N. J.  
 Dobbie Foundry & Machine Co., Niagara Falls, N. Y.  
 Dodge Mfg. Corp., Milwaukee, Ind.  
**DORR-OLIVER, INC., THE BARRY PLACE, STAMFORD, CONN. .... 225-228**  
 Dorsey Trailers, Elba, Alabama  
**DOW CHEMICAL CO., THE, MIDLAND, MICH. .... 8**  
 Dravo Corp., Neville Island, Pittsburgh 26, Pa.  
 Dresser Mfg. Co., Bradford, Pa.  
 Dresser-Stacey Co., Div., 5335 Vine St., Cincinnati 16, Ohio  
 Drott Mfg. Corp., 2841 W. Wisconsin Ave., Milwaukee 5, Wis.  
 Drullard Co., Howard, 1026 Folsom St., San Francisco 4, Calif.  
 Ducois Co., 152 E. 2nd St., Minnola, N.Y.  
 Dunkin Blue Print & Supply Co., Box 1400, Grand Junction, Colo.  
 duPont de Nemours & Co., E. I. Electrochemicals Dept., Wilmington, Del.  
**DUPONT DE NEMOURS & CO., INC., EX-PLORERS DIV., WILMINGTON 32, DELAWARE .... 82**  
 duPont de Nemours & Co., Inc., Fabrics Div., Newburgh, N.Y.  
 duPont de Nemours & Co., E. I. Gracelli Chemicals Dept., duPont Bldg., Wilmington, Del.  
 duPont de Nemours & Co., E. I., Wilmington 34, Del.  
 Duquesne Mine Supply Co., Pittsburgh 9, Pa.  
 Duriron Company, Inc., P.O. Box 1019, Dayton 1, Ohio  
 Duro-Test Corp., 2321 Hudson Blvd., North Haver, New Jersey  
 Dwight Lloyd, Inc.—see Sintering Mach. Corp., Nectong, N.J.

## E

Earle Iron Works, 225 Holcomb Ave., Des Moines, Iowa

Earle Gear & Mach. Co., 4707 Stanton Ave., Philadelphia 44, Pa.  
 Eastern Constructors, Inc., Poland, Ohio  
 Eastern Electro-Casting Co., Ltd., 15 St. Joseph St., Lachine, Montreal, Canada  
 Easton Car & Construction Co., Easton, Pa.  
 Easton Plastic Prod., Co., 900 Line St., Easton, Pa.  
 Eaton-Dikeman Co., Filter Town, Mt. Holly Springs, Pa.  
 Eberbach Corp., 200 E. Liberty St., Ann Arbor, Mich.  
 Economy Fuse & Mfg. Co., Greenview Ave. at Diversey Pkwy., Chicago, Ill.  
 Edison, Inc., Thomas A., Edison Storage Battery Div., West Orange, N.J.  
 Endicott Forging & Mfg. Co., 1901 North St., Endicott, N. Y.  
**EDWARDS CO., E. H. SOUTH SAN FRANCISCO, CALIF., WM 351 (WORLD MINING ONLY)**  
 Edwards Co., Inc., Post Rd., Norwalk, Conn.  
 Edwards & Co., H. D., 175 E. Larned St., Detroit, Mich.  
**ELMO CORP., 634 S. 4TH WEST ST., SALT LAKE CITY 10, UTAH .... 231-234**  
 Elser Engr. Co., Inc., 750 S. 19th St., Newark 3, N. J.  
 Electric Arc, Inc., 152 Jelliff Ave., Newark 4, N. J.  
 Electric Controller & Mfg. Co., 2700 East 79th St., Cleveland 4, Ohio  
 Electric Machinery Mfg. Co., 800 Central Ave., Minneapolis 13, Minn.  
 Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio  
 Electric Specialty Co., 211 South St., Stamford, Conn.  
**ELECTRIC STEEL FOUNDRY CO., 2141 N W 25TH AVE., PORTLAND 10, ORE. ... 31**  
 Electric Storage Battery Co., Erie Industrial Division, 42 South 15th Street, Philadelphia 2, Pa.  
 Electric Tachometer Corp., 2218 Vine St., Philadelphia 3, Pa.  
 Electrical Facilities, Inc., 4224 Holden St., Oakland 8, Calif.  
 Electrician Engr. Equip. Co., 24th St. & Division Ave., Melrose Park, Ill.  
 Electro-Tech. Equip. Co., Canal St., N.Y., N.Y.  
 Electromech Corp., 48 Couch St., Rochester 9, N. Y.  
 Electronic Products Co., 5330 E. Olympic Blvd., Los Angeles 23, Calif.  
 Elektrokemik A. S., 101 Park Ave., New York 17, N. Y.  
 Elkhart Brass Mfg. Co., Inc., 1303 W. Beardsley Ave., Elkhart, Ind.  
 Ellerman Co., 1210 Continental Bank Bldg., Salt Lake City, Utah  
 Elliott Co., Jeannette, Pa.  
 Elliott Co., Crocker-Wheeler Div., Ampers 5, N. J.  
 Elross Corp., 2600 Corman Ave., Cincinnati 25, Ohio  
 El Paso Testing Laboratories, El Paso, Tex.  
 El-Tronics, Inc., 5th & Noble Sts., Philadelphia, Pa.  
 Euclid Electric & Mfg. Co., 20 Edwards St., Madison, Ohio  
 Emerson Electric Mfg. Co., 8100 Florissant Ave., St. Louis 21, Mo.  
 Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio  
 Engel, Rene, 1223 Blair Ave., S. Pasadena, Calif.  
 Engineer Co., 75 West St., New York 4, N.Y.  
**ENGINEERS SYNDICATE LTD., 501 HOLLYWOOD BLVD., HOLLYWOOD 7, CALIF. .... 65**  
 Enley Products, Inc., 1236 Broadway, Brooklyn 21, N.Y.  
 Ensign-Bickford Co., Simsbury, Conn.  
 Enterprise Eng. & Mach. Co., 18th & Florida Sts., S.F. 10, Calif.  
 Enterprise Wheel & Car Corp., P.O. Box 151, Bristol, Va.  
**EQUIPMENT ENGINEERS INC., 41 BUTTER ST., SAN FRANCISCO 4, CALIF. .... 26**  
 Erie Pump & Eng. Wks., 165 Glenwood Ave., Medina, N.Y.  
 Erie Strayer Co., P.O. Box 1621, Erie, Pa.  
 Erie Mfg. Co., 291 Magnet Drive, Erie, Pa.  
 Essex Wire Corp., 1601 Wall Street, Fort Wayne 6, Indiana  
 Esso Standard Oil Co., 15 West 51st St., New York 19, N. Y.  
 Esterline-Angus Co., Inc., P.O. Box 598, Indianapolis 5, Ind.  
**EUCLED DIVISION, SEE GENERAL MOTORS CORP. .... 145**  
 Estotec Welding Alloys Corp., 40 Worth St., New York 13, N. Y.  
 Everlasting Valve Co., 49 Fisk St., Jersey City 4, New Jersey  
 Exolon Co., The, Tonawanda, N.Y.  
 Exploration Drilling Co., P.O. Box 1361, Bakersfield, Calif.

## F

F A B Mfg. Co., 1249-97th Street, Oakland 9, Calif.  
 Falling Co., Geo., 424 E. Broadway, Enid, Oklahoma  
 Fairbanks Co., 588 Lafayette St., New York 9, New York

Fabre & Co., 600 S. Michigan Ave., Chicago 5, Ill.  
 Fairchild Aerial Surveys, Inc., 224 E. 11th St., Los Angeles, Calif.  
 Falk Corp., 3004 W. Canal St., Milwaukee 8, Wis.  
 Farmers Engr. & Mfg. Co., Irwin, Pennsylvania  
 Farrel-Birmingham Co., Inc., Ansonia, Conn.  
 Farris Engineering Corp., 400 Commercial Ave., Fallenden Park, M. J.  
 Fato-Road-Bench Co., The, Plymouth Locomotive Wks. Div., Plymouth, Ohio  
 Federal Motor Truck Co., 8730 Federal Ave., Detroit 6, Mich.  
 Federal Pacific Electric Co., 5815 3rd St., San Francisco, Calif.  
 Federal Pacific Electric Co., 4145 E. 79th St., Cleveland, Ohio  
 FEDERAL PIPE & TANK CO., 6851 EAST MARGINAL WAY, SEATTLE, WASH. 45  
 Federal Sign & Signal Corp., 5700 S. State St., Chicago 10, Ill.  
 Felt Products Mfg. Co., 1204 Carroll Ave., Chicago 7, Ill.  
 Fan Machine Co., 28914 Lakeland Blvd., Wickliffe, Ohio  
 Fawcett Mfg. Co., 154 Home St., Newark 3, N. J.  
 Fenelon Co., 2920 N. 4th St., Philadelphia 33, Pa.  
 Fibrop Industries, Inc., 2423 S. Michigan Ave., Chicago 16, Ill.  
 Filter Fabrics, Inc., 1879 W. 3rd St., Cleveland 18, Ohio  
 Filtration Engineers Inc., 135 Oraton St., Newark 4, N. J.  
 Firestone Tire & Rubber Co., 1200 Firestone Pkwy., Akron 19, Ohio  
 Fifth Sterling Inc., 8113 Forbes St., Pittsburgh 30, Pa.  
 Fischer & Porter Co., 215 Warminster Rd., Haddonfield, Pa.  
 Fisher Leather Belting Co., Inc., 325 N. 3rd St., Philadelphia 6, Pa.  
 FISHER RESEARCH LABORATORY, INC., 1941 UNIVERSITY AVE., PALO ALTO, CALIF.  
 Fish Brothers Bedding Co., Lubriplate Div., 129 Lockwood St., Newark 5, N. J.  
 Fitts Water Wheel Co., Hanover, Pa.  
 Flexible Steel Lacing Co., 4807 Lexington St., Chicago 44, Ill.  
 Flexible Valve Corp., 400 Commercial Ave., Fallenden Park, M. J.  
 Flexmont Co., 100 Park Ave., New York 17, N. Y.  
 Flexible Steel Lacing Co., 4807 Lexington St., Chicago 44, Ill.  
 Flexible Tubing Corp., Guilford, Conn.  
 Flood City Brass & Electric Corp., Messenger & Elder St., Johnstown, Pa.  
 Food Machinery & Chemical Corp., Fuelcon Pump Div., 301 West Avenue 23, Los Angeles, Calif.  
 Foote Bros. Gear & Machine Corp., 4445 South Western Blvd., Chicago 9, Ill.  
 Ford Motor Co., 3541 Schaeffer Rd., Dearborn, Mich.  
 Forber Corp., 3044 Random Road, Cleveland 6, Ohio  
 Foster Engineering Co., 935 Lashig Ave., Union, N. J.  
 Foster Co., L. B., P.O. Box 1647, Pittsburgh 80, Pa.  
 Foster Wheeler Corp., 105 Broadway, New York 4, N. Y.  
 Four Wheel Drive Auto Co., 12th Street, Clintonville, Wis.  
 Foxboro Co., Foxboro, Mass.  
 Foxboro Co., Inc., S. G., P.O. Box 1138, Trenton 6, N. J.  
 Fraser & Chalmers Engr. Wks., Fraser Rd., Erith, Kent, England  
 Frauchauf Trailer Co., 10940 Harper Ave., Detroit 22, Mich.  
 F. R. X Mfg. Co., Norwalk, Ohio  
 Fuller Co., Canton, Pa.  
 Fuller Mfg. Co., Front St., Kalamazoo, Mich.  
 Fulton Bag & Cotton Mills, Inc., 170 Boulevard, S.E. Atlanta, Ga.  
 Fulton Mfg. Corp., 286 Michigan St., Toledo 2, Ohio  
 Fry-Fryer Co., 221 Crane St., Dayton, Ohio

## G

G. & W. Electric Specialty Co., 7780 Dante Ave., Chicago 19, Ill.  
 GAILGHER CO., 548 WEST 8TH SOUTH ST., P.O. BOX 269, SALT LAKE CITY 10, UTAH  
 Galton Allsteel Body Co., Galton, Ohio  
 Galland-Henning Mfg. Co., Nopak Div., 31st St., Milwaukee, Wis.  
 GARDNER-DENVER CO., FRONT ST., QUINCY, ILL.  
 Gardner Electric Mfg. Co., 4227 Hollis St., Emeryville 6, Calif.  
 Garlock Packing Co., Palmira, New York  
 Garwood Industries, Inc., Wayne, Mich.  
 Gate City Steel-Robe, 4000 Warm Springs Ave., Boise, Idaho  
 Gates Rubber Co., 999 S. Broadway, Denver, 17, Colo.  
 Gatz Corp., 223 N. LaSalle St., Chicago 1, Ill.  
 Gaudier Crusher & Pulverizer Co., 3917 N. Market St., St. Louis, Mo.

General American Transportation Corp., 125 S. LaSalle St., Chicago 99, Ill.  
 General Aniline & Film Corp., Ozalid A Div., Johnson City, N. Y.  
 General Cable Corp., 420 Lexington Ave., New York, New York  
 General Detroit Corp., 110 Mt. Elliott, Detroit, Mich.  
 General Dry Batteries, Inc., 13000 Athens Ave., Cleveland 7, Ohio  
 General Dynamics Corp., Electro Dynamics Div., Avenue A, Bayonne, New Jersey  
 General Electric Co., Apparatus Sales Div., 1 River Rd., Schenectady 5, New York  
 General Electric Co., Plainville, Conn.  
 General Electric Co., Carbonyl Dept., Box 297, Roosevelt Park Place, Detroit 22, Mich.  
 General Electric Co., Construction Materials Division, 1225 Boston Ave., Bridgeport 2, Conn.  
 GENERAL ELECTRIC CO., INTERNATIONAL 570 LEXINGTON AVE., N. Y. 2 WM 244 241 (WORLD MINING ONLY)  
 General Electric Co., Lamp Div., Main Park, Cleveland 12, Ohio  
 General Equipment & Mfg. Co., 120 S. Campbell St., Louisville 6, Ky.  
 General Machinery Co., 3500 Riverside Ave., Spokane, Wash.  
 General Metals Corp., Enterprise Engine & Machinery Co., 18th & Florida Streets, San Francisco 10, Calif.  
 GENERAL MILLS, INC., SPECIAL COMMODITIES DIV., 400 SECOND AVE. SOUTH, MINNEAPOLIS 1, MINN.  
 General Motors Corp., Allison Div., Indianapolis, Ind.  
 General Motors Corp., Deleo Products Div., 229 E. First St., Dayton, Ohio  
 GENERAL MOTORS CORP., DETROIT DIESEL ENGINE DIV., 19400 W. OUTER DRIVE, DETROIT 25, MICH.  
 General Motors Corp., Euclid Div., 1361 Charlow Rd., Cleveland 17, Ohio  
 General Motors Corp., GMC Truck & Coach Div., 660 S. Blvd., E. Pontiac 11, Mich.  
 General Motors Corp., New Departure Div., Bristol, Conn.  
 GENERAL MOTORS OVERSEAS OPERATION, 1775 BROADWAY, NEW YORK 19, N.Y.  
 General Petroleum Corp., 612 S. Flower St., Los Angeles, Calif.  
 General Refractories Co., 1520 Locust St., Philadelphia 2, Pa.  
 General Tire & Rubber Co., Akron 1, Ohio  
 GEO-ENGR., 204 MAIN ST., GRAND JUNCTION, COLO.  
 Geophysical Services, Inc., 5900 Lemmon St., Dallas 9, Texas  
 Geoprospection Seism. Inc., 141 East 2nd St., Suite 205, Salt Lake City, Utah  
 Georator Corporation, Manassas, Virginia  
 Georgia Iron Works Co., 605-12th Street, Augusta, Ga.  
 GETMAN BROS., DUNKLE AVE., SOUTH HAVEN, MICH.  
 Giant Mfg. Co., 8th at 12th Ave., Council Bluffs, Iowa  
 Gibraltar Equipment & Mfg. Co., P.O. Box 304, Alton, Ill.  
 Gibson, W. W., 1015 Fruitvale Ave., Oakland 1, Calif.  
 Gibrath Chemical Co., 283 Brannan St., San Francisco, Calif.  
 Gilson Screen Co., 110 Cent St., Mallota, Ohio  
 GODOY & CO., INC., E. A. CUNARD BLDG., 25 BROADWAY, NEW YORK 4, N.Y.  
 Goldak Co., 1444 W. Glenside Blvd., Glendale 1, Calif.  
 Golden-Anderson Valve Specialty Co., 1228 Ridge Ave., Pittsburgh, Pa.  
 GOODALL BROS., BOX 537, 46 S. MAIN ST., HELENA, MONTANA  
 Goodall Rubber Co., 480 Whitehead Road, Trenton, N.J.  
 Goodson Mfg. Co., 4234 S. Halsted St., Chicago 9, Ill.  
 GOODMAN MFG. CO., MANCHA STORAGE BATTERY LOCOMOTIVE DIV., 4850 SOUTH HALSTED ST., CHICAGO 9, ILLINOIS WM 258  
 Goodrich Co., B. F., Industrial Prod. Div., 500 S. Main St., Akron, Ohio  
 Goodyear Tire & Rubber Co., 1144 E. Market St., Akron 16, Ohio  
 German-Rupp Co., 305 Bowman St., Mansfield, Ohio  
 GOULD & CO., GORDON L. 58 BUTTER ST., SAN FRANCISCO 4, CALIF.  
 Gould-National Batteries, Inc., Trenton 7, N. J.  
 Goulds Pumps, Inc., 300 Fall St., Seneca Falls, New York  
 Goyne Steam Pump Co., Ashland, Pa.  
 Graham-White Mfg. Co., Princeton Foundry & Supply Div., Princeton, W. Va.  
 Graham Trailer Corp., Spencerville Rd., Delphos, Ohio  
 Granby Co., Mining, Smelting & Power Co., Ltd., Copper Mt., British Columbia, Canada  
 Grant Gear Wks., Inc., 154 W. Second St., So. Boston 27, Mass.  
 Graton & Knight Co., 256 Franklin St., Worcester 4, Mass.

Graver Tank & Mfg. Co., Inc., 4809 Tod Ave., East Chicago, Indiana  
 Gray Instrument Co., 64 W. Johnson St., Phila. 44, Pa.  
 GRAYBAR ELECTRIC CO., INC., 430 LEXINGTON AVE., NEW YORK 17, N.Y.  
 Great Lakes Electric Mfg. Co., 17 S. DuPlaines St., Chicago 6, Ill.  
 Green, Inc., 1201-24th St., Oakland 7, Calif.  
 Green Fire Brick Co., A. F., Mexico, Mo.  
 Greene, Treed & Co., North Wales, Pa.  
 GREENSBURG MACHINE CO., STANTON ST., GREENSBURG, PA.  
 GREGG CO., LTD., THE, 19 HECTOR ST., NEW YORK 6, N.Y.  
 Grinnell Co., Inc., 260 West Exchange St., Providence, R. I.  
 GRIPHOIST CO., 700 POLK ST., S.F. 9, CALIF.  
 Gulf Oil Corp.-Gulf Refining Co., 1822 Gulf Bldg., Pittsburgh 30, Pa.  
 Gunderson-Taylor Mach. Co., 1237 Shermans St., Denver, Colorado  
 Gundlach Machine Co., T. J., 226 Canterville Ave., Belleville, Ill.  
 Gurley, W. & L. E., 821 Fulton St., Troy, N.Y.  
 Gaston-Bacon Mfg. Co., 210 W. 10th St., Kansas City, Mo.  
 Gwilliam Co., 360 Furman St., Brooklyn 1, N. Y.  
 Guyan Machinery Co., Box 180, Logan, W. Va.

## H

H-B Instrument Co., Inc., American & Bristol Sta., Philadelphia 40, Pa.  
 Hack Engineering Co., 124 Waseo Market, Denver, Colo.  
 Halm Mfg. Co., Inc., Geo., 350 5th Ave., N.Y. 1, N.Y.  
 Halm Co., W. M., Box 55, 700 Commerce St., Danville, Ill.  
 Hall & Sons, Amos H., 5500 N. Water St., Philadelphia 20, Pa.  
 Halsted Mfg. Co., 1601 West Florence Ave., Inglewood, Calif.  
 Hamilton Rubber Mfg. Corp., Trenton 3, N. J.  
 Hammond Bag & Paper Co., Wellburg, W. Va.  
 Hammond Co., J. V., Box 332, Spangler, Pa.  
 HANKS, ABBOT A., INC., 624 SACRAMENTO ST., SAN FRANCISCO 11, CALIF.  
 Hanson Clutch & Machinery Co., Wall & Miami St., Lima, Ohio  
 Hapman Conveyors, Inc., Division Hapman-Dutton Co., 630 Gibson St., Kalamazoo, Mich.  
 Harbison-Walker Refractories Co., 1900 Farmington Bank Bldg., Pittsburgh 22, Pa.  
 HARDING CO., INC., 349 ARCH ST., YORK, PA.  
 Hardocg Div., Cardox Corp., 807 N. Michigan Ave., Chicago 1, Ill.  
 HARNISCHFEGGER CORP., 4400 W. NATIONAL AVE., MILWAUKEE 46, WIS.  
 Harnett Electric Furnace Corp., Niagara Falls, N. Y.  
 Harrington & King Perforating Co., 5555 W. Fillmore St., Chicago 44, Ill.  
 Harrington Co., The, Gravers Rd., Plymouth Meeting, Pa.  
 Hart Mfg. Co., Bartholomew Ave., Hartford, Conn.  
 Hartwell Propeller Fan Co., 1905 Downing St., Piqua, Ohio  
 Hauck Mfg. Co., 102-148 Tenth St., Brooklyn 18, N. Y.  
 Hauser-Stander Tank Co., 4838 Spring Grove Ave., Cincinnati, Ohio  
 Havlicek Diamond Drilling Co., Inc., 2708 N. Pittsburgh St., Spokane 28, Wash.  
 HAWLEY & HAWLEY, BOX 1989, DOUGLAS, ARIZ.  
 HAWTHORNE, HERB J. INC., P.O. BOX 7366, HOUSTON 8, TEXAS  
 HAYES TRUCK APPLIANCE CO., RICHMOND IND.  
 Hayes Stellite Co., 725 Lindsay St., Kokomo, Ind.  
 Hazard Insulated Wire Wks., Passaic, N.J.  
 Heil Co., 3000 W. Montana St., Milwaukee 1, Wis.  
 Helmeck Foundry-Machine Co., P.O. Box 71, Fairmont, W. Va.  
 Hendrick Mfg. Co., Carbondale, Pa.  
 Henley Equip. Co., 800 Peralta Ave., San Leandro, Calif.  
 Hercules Motors Corp., 101 11th St. S.E., Canton 3, Ohio  
 Hercules Powder Co., 900 Market St., Wilmington, Del.  
 Hercules Steel Products Corp., Gallon, Ohio  
 Hartner Electric Co., 12390 Elmwood Ave., Cleveland 11, Ohio  
 How Duty Electric Co., 4212 W. Highland Blvd., Milwaukee 1, Wis.  
 Hewitt-Robins Inc., 686 Glanbrook Rd., Stamford, Conn.  
 Hewitt-Robins Inc., Hewitt Rubber Div., 240 Kensington Ave., Buffalo 8, N. Y.  
 Hoyt & Patterson, Inc., 55 Fort Pitt Blvd., Pittsburgh 22, Pa.  
 HUI & Judd, Assayers, 300 Pearl St., Boulder, Colo.  
 Hillman Co., C. Kirk, 2801 First Ave. South, Seattle 4, Wash.

Hirsch Bros. Machy. Co., P.O. Box 224, El Paso, Tex.  
 Hobart Bros. Co., Hobart Sq., Troy, Ohio  
 Hockensmith Corp., Penn., Pennsylvania  
 Hoffman Bros. Drilling Co., 120 E. Mahoning St., Piquette, Pa.  
 Hoffman Mch. Corp., V. S., 105 Fourth Ave., New York 2, N. Y.  
 Holly Pneumatic Systems Inc., 15 East 40th St., New York 16, N. Y.  
 Holman Bros. (Canada) Ltd., Kent Ave., Kitchener, Ontario, Canada  
 Holman Bros. Ltd., Camborne, England  
 Holmes & Bros. Inc., Robert, 2436 Junction Ave., Danville, Ill.  
 Homelite Corp., Riverdale Ave., Port Chester, New York  
 Homer Mfg. Co., 142 East Pearl St., Lima, Ohio  
 Homestead Valve Mfg. Co., Coraopolis, Pa.  
 Hose Accessories Co., 17th & Lehigh Ave., Philadelphia 32, Pa.  
 Howe McCann Telephone Co., Inc., 28th & 3rd Ave., Brooklyn, N. Y.  
 HOSFELD MFG. CO., 400-402 WEST THIRD ST., WINONA, MINN. .... 69  
 Houdaille-Hershey of Indiana, Inc., Filtration Div., Lebanon, Ind.  
 Hough Co., The Frank G., 850 Sunnyside Ave., Libertyville, Ill.  
 Houghton & Co., E. F., 303 W. Lehigh Ave., Philadelphia 33, Pa.  
 House & Sons, Inc., 10 Perry St., Unionville, Conn.  
 Houston Technical Lab., 2424 Barnard, Houston 6, Texas  
 Howe Seale Co., Rutland, Vermont  
 Howell Electric Motors Co., 409 N. Roosevelt St., Howell, Mich.  
 HUMPHREYS INVESTMENT CO., 910 FIRST NATIONAL BANK BLDG., DENVER 2, COLO. .... 243  
 Huxley Tool Co., P.O. Box 2539, Houston, Tex.  
 Hullin, Carlton D., 7 Ardilla Rd., Orinda, Calif.  
 Hydraulic Press Mfg. Co., Hydraulic Power Div., Lincoln Ave., Mount Gilead, Ohio  
 Hydraulic Supply Mfg. Co., 71 4th Ave. So., Seattle, Wash.  
 HYSTER CO., 2902-80 N.E. CLACKAMAS ST., PORTLAND 8, OREGON ..... 25

Ideal Electric & Mfg. Co., Mansfield, Ohio  
 Ideal Industries, Inc., 2624 Park Ave., Syracuse, N. Y.  
 IDECO Div., Dresser-Stacey Co., 875 Michigan Ave., Columbus, Ohio  
 Iig Electric Ventilating Co., 2830 N. Pulaski Rd., Chicago 41, Ill.  
 Illinois Powder Mfg. Co., 506 Olive St., St. Louis, Mo.  
 Illinois Testing Lab., 480 N. La Salle St., Chicago 10, Ill.  
 Imperial Control Mfg. Co., Box 538, Jellison, Tenn.  
 Imperial Electric Co., 63 Iva Ave., Akron 9, Ohio  
 Indiana Foundry Co., 144 Clymer Ave., Indiana, Pa.  
 INDUSTRIAL AIR PRODUCTS CO., 3280 N.W. YEON AVE., PORTLAND 10, ORE. .... 70  
 Industrial Glass Co., 700 Garfield St., Danville, Ill.  
 Industrial Overlay Metals, 410 M. Barron St., Eaton, Ohio  
 Ingalls Iron Wks. Co., Birmingham Tank Div., Birmingham, Ala.  
 INGERSOLL-RAND CO., 11 BROADWAY, NEW YORK 4, N. Y. .... 27, 253  
 Inland Steel Co., 35 S. Dearborn St., Chicago 3, Ill.  
 Insley Mfg. Corp., P.O. Box 167, Indianapolis, Ind.  
 International Combustion Ltd., 19 Woburn Place, London W.C. 1, England  
 International Engr., Inc., 1145 Bollerander Ave., Dayton 1, Ohio  
 INTERNATIONAL GENERAL ELECTRIC CO., 578 LEXINGTON AVE., NEW YORK 21, N. Y. .... WM 240, 241  
 (WORLD MINING ONLY)  
 International Geophysics, Inc., 1063 Gayley Ave., Los Angeles, Cal.  
 INTERNATL HARVESTER CO., 180 N. MICHIGAN AVE., CHICAGO 4 ILL. .... 6  
 INTERNATL HARVESTER EXPORT CO., 180 N. MICHIGAN AVE., CHICAGO 4 ILL. .... WM 6  
 (WORLD MINING ONLY)  
 International Resistance Co., 401 M. Broad St., Philadelphia, Pa.  
 INTERNATL SMELTING & REFINING CO., 919 KEARNS BLDG., SALT LAKE CITY, UTAH ..... 82  
 Iowa Mfg. Co., Cedar Rapids, Iowa  
 Iron Fireman Mfg. Co., 3170 W. 100th St., Cleveland 11, Ohio  
 Ironton Engine Co., Payson Road, Farmington, N. J.  
 Ironton Fire Brick Co., Box 538, Ironton, Ohio  
 Irwin Foundry & Mine Car Co., P.O. Box 311, Irwin, Pa.  
 I-T-E Circuit Breaker Co., 10th & Hamilton Sts., Philadelphia 26, Pa.

Jabco Pump Co., 2031 N. Lincoln, Burbank, Calif.  
 Jacuzzi Bros. Inc., 5327 Jacuzzi Ave., Richmond, Calif.  
 Jaeger Machine Co., 350 W. Spring St., Columbus, Ohio  
 James Equipment, Inc., 712 Rockefeller St., Elizabeth, N. J.  
 Janette Electric Mfg. Co., Lehigh Ave., at Main, Morton Grove, Ill.  
 Jarrell-Ash Co., 25 Farwell St., Newtonville 50, Mass.  
 Jefferson Union Co., 45 Fletcher Ave., Lexington, Mass.  
 JEFFREY MFG. CO., 861 N. 4th ST. COLUMBUS 16, OHIO ..... 19  
 Jet-Lube, Inc., 7342 West Beverly Blvd., Los Angeles 36, Calif.  
 Jet Lube, Inc., 3093 N. California St., Burbank, Calif.  
 JOHNS-MANVILLE SALES CORP., 22 EAST 40TH ST., NEW YORK 16, N. Y. .... 252  
 Johnson, J. M. & O. R., 505 North St., Ishpeming, Mich.  
 JOHNSON, HERBERT BANKS, 520 EAST ST., ROCHESTER 7, NEW YORK ..... 123  
 Johnson Belting Co., Inc., 34 Hubert St., N.Y. 13, N. Y.  
 Johnson Block Co., Box 1432, 501 S. Rockford St., Tulsa, Okla.  
 Johnson Mfg. Co., Fox Ave. & Holly St., Seattle 5, Wash.  
 Johnson March Corp., 1724 Chestnut St., Philadelphia 3, Pa.  
 Johnson, R. G. Co., 831 Wash. Trust Bldg., Washington, Pa.  
 Johnson, G. R., 6026 Butterworth Rd., Mercer Island, Wash.  
 Johnston Pump Co., 3272 E. Foothill, Pasadena, Calif.  
 Jones, W. A. Foundry & Machine Co., 4401 W. Roosevelt Road, Chicago 24, Ill.  
 JONES, PHILIP L., 465 MINERS BANK BLDG., JOPLIN, MO. .... 123  
 Jones & Laughlin Steel Corp., 3 Gateway Center, Pittsburgh 30, Pa.  
 JOY MFG. CO., HENRY W. OLIVER BLDG., PITTSBURGH 22, Pa. .... 280, 261  
 Judd & Son, J. D., Shullburg, Wisconsin  
 Junction Bit & Tool Co., P.O. Box 1961, Grand Junction, Colo.  
 Justice Mfg. Co., 2061 N. Southport, Chicago 14, Ill.

Kaiser Aluminum & Chem. Corp., 1954 Broadway, Oakland 12, Calif.  
 Kaiser Steel Corp., 1924 Broadway, Oakland, Calif.  
 KA-MO TOOLS, INC., 1845 SO. 35 AVE., CICEIRO 50, ILL. .... 94  
 Kato Engineering Co., 1415 First Ave., Mankato, Minn.  
 Kay Brunner Steel Prods., Inc., 2721 Elm St., Los Angeles 65, Cal.  
 Keasbey & Mattison Co., Ambler, Pa.  
 KEEGEL, C. P., 707 S. 6TH ST., LAS VEGAS, NEVADA ..... 123  
 Keeney, Paul E. Co., 1125 S. E. Grand Ave., Portland 14, Ore.  
 Kellogg Co., 15 Williams St., Stonington, Conn.  
 Kelley & Co., O. G., 96 Taylor St., Boston 22, Mass.  
 Kellogg Switchboard & Supply Co., 4450 S. Cicero Ave., Chicago 38, Ill.  
 Kennametal Inc., Minnetonka Div., Bedford, Pa.  
 Kennedy-Van Saun Mfg. & Eng. Corp., Two Park Ave., New York 16, N. Y.  
 Kennedy Valve Mfg. Co., P.O. Box 921, Elmira, N. Y.  
 Kensington Steel Co., 505 Kensington Ave., Chicago 28, Ill.  
 Kenworth Motor Truck Corp., 8801 E. Marginal Way, Seattle, Wash.  
 Kenyon Machinery Co., 635 Walnut St., Denver 4, Colo.  
 Kerite Co., 30 Church St., New York 7, N. Y.  
 Kern Instruments, Inc., 120 Grand St., White Plains, N. Y.  
 Kerrigan Iron Works, Inc., 1033 Herman St., Nashville 2, Tenn.  
 Keuffel & Esser Co., 280 Adams St., Hoboken, N. J.  
 Keystone Driller Co., 2021 9th Ave., Beaver Falls, Pa.  
 Keystone Lubricating Co., 21st & Lippincott Sts., Philadelphia 32, Pa.  
 Keystone Steel & Wire Co., Peoria, Ill.  
 Kidd, Walter & Co., Inc., 156 Main St., Belleville 9, N. J.  
 Kieley & Mueller, Inc., 64 Genung St., Middletown, N. Y.  
 Kirk & Blum Mfg. Co., 3100 Forrer St., Cincinnati 9, Ohio  
 Klein, Mathias & Co., 3250 Belmont Ave., Chicago 18, Ill.  
 Klipfel Valves Inc., 1975 Lincoln Ave., Hamilton, Ohio  
 Klockner-Humboldt-Deutz Ag., Koln, Germany  
 Knox Mfg. Co., 229 W. Clinton Ave., Oaklyn, N. J.

Koebel Diamond Tool Co., 9454 Grinnell Ave., Detroit 18, Mich.  
 Koehring Co., 1624 West Concordia Ave., Milwaukee 16, Wis.  
 Koehring Southern Co., Manufacturers Rd., Chattanooga 1, Tenn.  
 Kohler Co., Kohler, Wis.  
 Kolton Electric Mfg. Co., 123 New Jersey Railroad Ave., Newark 3, N. J.  
 Komar-Sanderson Engr. Corp., 208 Holland Rd., Passaic, N. J.  
 Koppers Co., Inc., Metal Products Div., 200 Scott St., Baltimore 3, Md.  
 Koppers Co., Inc., Koppers Bldg., Pittsburgh 19, Pa.  
 Koopers Co., Inc., Wolman Dept., 100 Koopers Bldg., Pittsburgh, Pa.  
 Korb-Pettit Wire Fabrics & Iron Works, Inc., Subsid. of Hewitt-Robins Inc., 1606 N. Maccher St., Philadelphia 23, Pa.  
 Krebs, Kellogg, 564 Market St., San Francisco 4, Calif.  
 Kresser & Sons, Inc., 3435 N. 8th St., Philadelphia 48, Pa.  
 Kragh Pump & Equipment Co., 615 Harrison St., San Francisco, Calif.  
 Kuhlman Electric Co., 1000 24th St., Bay City, Mich.  
 Kurs & Root Co., 233 E. North Island St., Appleton, Wis.

LaBour Co., 1607 Sterling Ave., Elkhart, Ind.  
 Laclede-Christy Co., 2006 Hampton Ave., St. Louis 10, Mo.  
 La Crosse Trailer Corp., La Crosse, Wis.  
 Lake Shore Electric Corp., 274 West St., Bedford, Ohio  
 LAKE SHORE ENGINEERING CO., IRON MTN., MICH. .... 31  
 Lakeside Bridge & Steel Co., 5300 N. 35th St., Milwaukee 9, Wis.  
 Lalanc & Grosjean Mfg. Co., P.O. Box 51, Woodhaven 51, N. Y.  
 Lamb Electric Co., Lake St., Kent, Ohio  
 Lamson & Sessions Co., 1971 West 85th St., Cleveland 2, Ohio  
 Lamson Corp., Lamson St., Syracuse 1, New York  
 Landis Steel Co., Box 242, 116 West A St., Fisher, Okla.  
 Lang Co., Inc., Salt Lake City, Utah  
 Lapp Insulator Co., Inc., 30 Gilbert St., Le Roy, N. Y.  
 Lauenstein Mfg. Co., Ashland, Pa.  
 Laughlin Co., Thomas, 145 Fore St., Portland 4, Maine  
 Lawrence Pump & Engine Co., Canal & Marston Sts., P.O. Box 70, Lawrence, Mass.  
 Lawrence Pumps Inc., 371 Market St., Lawrence, Mass.  
 Laylander, Philip A., Box 241, Fallou, Nev.  
 Leach Corp., Inst. Div., 4441 S. Santa Fe Ave., Los Angeles 38, Calif.  
 Lead Lined Iron Pipe Co., 35 Broadway, Wakefield, Mass.  
 LEDERN MFG. CO., 1655 S. SAN PEDRO ST., LOS ANGELES 15, CALIF. .... 31  
 LEDOUX & CO., 135 AVE. OF THE AMERICAS, NEW YORK 13, N. Y. .... 123  
 Ledoux & Co., 359 Alfred Ave., Teaneck, N. J.  
 Leeds & Northrup Co., 4970 Stanton Ave., Phila. 44, Pa.  
 Lee-Norse Co., 751 Lincoln Ave., Charleston, S. C.  
 Lee Rubber & Tire Corp., Republic Rubber Div., Albert St., Youngstown, Ohio  
 Lectonia Tool Co., 142 Main St., Lectonia, Ohio  
 Lee-Hi Home Accessories Co., Lehigh Ave. & 17th St., Philadelphia 32, Pa.  
 Lehigh Safety Shoe Co., First & Minor Sts., Emmaus, Pa.  
 Lehigh Electric Co., 1501 Webster St., Dayton 1, Ohio  
 Leonard Electric Co., 3907 Perkins Ave., Cleveland 14, Ohio  
 LE ROI DIV., WESTINGHOUSE AIRBRAKE CO., 1786 S. 68 ST., MILWAUKEE 14, WIS. .... 4  
 LESCHEN WIRE ROPE DIV., H. K. PORTER CO., 2727 HAMILTON AVE., ST. LOUIS 12, MO. .... 68  
 LeTourneau-Westinghouse Co., 3501 N. Adams St., Peoria, Ill.  
 Leupold & Stevens Instruments, Inc., 4445 N. E. Gilman St., Portland 3, Ore.  
 Lile-Hoffman Cooling Towers, Inc., 1460 S. Vandewater Ave., St. Louis 10, Mo.  
 Lima Electric Motor Co., Findlay Road, Lima, Ohio  
 Lincoln Electric Co., 22501 St. Clair Ave., Cleveland 17, Ohio  
 Lindbergh Engrg. Co., Fisher Furnace Div., 2450 W. Hubbard St., Chicago, Ill.  
 Linds Air Products Co., 80 E. 42nd St., New York 17, N. Y.  
 Line Material Co., 700 W. Michigan St., Milwaukee 1, Wis.  
 Link-Belt Co., 387 N. Michigan Ave., Chicago 1, Ill. .... WM 250  
 (World Mining Only)  
 Link-Belt Speeder Corp., 1901 Sixth St., S.W., Cedar Rapids, Iowa



Lintz, Mark, 275 Middlefield Dr., San Francisco 27, Calif.  
 Lippmann Engineering Works, 4898 W. Mitchell St., Milwaukee 14, Wis.  
 Lister-Blackburn, Inc., 488 Lexington Ave., New York 17, N.Y.  
 Logan Engr. Co., 4951 Lawrence Ave., Chicago 30, Ill.  
 Lowergan Co., 286 Race St., Philadelphia 6, Pa.  
 Long Co., The, Box 381, Oak Hill, W. Va.  
 Lowrey Co., E. J., 1769 Pushay Tower, Minneapolis 5, Minn.  
 Loomis Machine Co., Tiffin, Ohio  
 Lovejoy Flexible Coupling Co., 4975 W. Lake St., Chicago 44, Ill.  
 Lowell Insulated Wire Div., 171 Lanes St., Lowell, Mass.  
 Lowell Wrench Co., 84 Commercial St., Worcester 5, Mass.  
 Ladow-Sayre Wire Cloth Co., 634 South Newton Ave., St. Louis 16, Mo.  
 Larkin Rule Co., Baginaw, Mich.  
 Lag-All Co., 244 E. Lancaster, Haverford, Pa.  
 Lakens Steel Co., Coatesville, Pa.  
 LUNDBERG EXPLORATIONS, LTD., VICTORY BLDG., TORONTO, CANADA 123  
 Lankenheimer Co., Beckman St. & Waverly Ave., Cincinnati 14, Ohio  
 Luria Engineering Co., 511 Fifth Ave., New York 17, New York  
 Lawrence Rubber Co., Trenton 7, N.J.  
 Lyons Engr. & Supply Co., Russ Building, San Francisco 4, Calif.

## M

MacBeth Instrument Corp., P.O. Box 950, Newburgh, N.Y.  
 MacClatchie Mfg. Co., Compton, Calif.  
 MACE CO., 3763 BLAKE ST., DENVER 5, COLO.  
 Mack, Peter, Box 698, Denver 3, Colo.  
 MACK TRUCKS, INC., EMPIRE STATE BLDG., NEW YORK 1, N.Y.  
 Macklin Equip. Co., 530 Harbor Blvd., West Sacramento, Calif.  
 Macleod Co., The, Box 452, Sharonville, Ohio  
 MacMillan Petroleum Corp., 558 W. Sixth St., Los Angeles 14, Calif.  
 MacWhirte Co., 2956 14th Ave., Kenosha, Wis.  
 Maddox Foundry & Machinery Works, Archer, Fla.  
 Mademo Tackle Block Co., Box 143, Easton, Pa.  
 Marie Chem. Co., 121 Crescent St., Brockton 2, Mass.  
 MAGMA COPPER CO., SUPERIOR, ARIZONA  
 Magnetics Engineering & Mfg. Co., 661 Van Houten Ave., Clifton, N.J.  
 Magnor Car Corp., 60 Church St., New York 1, N.Y.  
 Mahl Mfg. Co., 6322 Cambridge Ave., Minneapolis 1, Minn.  
 Majac, Inc., 23rd St. & P.R.R., Sharpsburg 16, Pa.  
 Malinckrodt Chemical Works, 2nd & Malinckrodt Streets, St. Louis 7, Mo.  
 Manchester Bit Corp., 11 Broadway, N.Y. 4, N.Y.  
 Manganeese Steel Forge Co., Richmond St. & Center Ave., Philadelphia 34, Pa.  
 Manheim Mfg. & Belling Co., Manheim, Pa.  
 Manitoba Steel Foundries, Ltd., Selkirk, Manitoba, Canada  
 Manhorves Engineering Corp., South 16th St., Manhorves, Wis.  
 Mann-Mine Research & Devel. Co., P. O. Box 167, Reading, Pa.  
 Marathon Coal Bit Co., Box 529, Montgomery, W. Va.  
 Marathon Electric Mfg. Corp., Waunakee, Wis.  
 Marble Card Electric Corp., Gladstone, Mich.  
 Marion Metal Products Co., Cheney Ave., Marion, Ohio  
 MARION POWER SHOVEL CO., MARION OHIO  
 Marie Crane & Hoist Co., 1433 E. 37th St., Philadelphia 43, Pa.  
 Markley Dist. Control System, Inc., 89 Snyder Road, Ramsey, N.J.  
 Marland Onway Chute Co., 561 Hillgrove Ave., LaGrange, Ill.  
 Marlow Pumps, Box 848, Ridgewood, N.J.  
 Marmon-Herrington Co., Inc., 1511 W. Washington St., Indianapolis 1, Ind.  
 Marsh Engineering Co., E. F., 4254 West Clanton Ave., St. Louis 16, Mo.  
 Martin Engineering Co., Drawer D, Nepesest, Ill.  
 Martin Pan & Hower Co., 4894 West 21st Place, Chicago 40, Ill.  
 MARTINDALE ELECTRIC CO., BOX 617, EDGEWATER, CLEVELAND 7, OHIO  
 Maryland Metal Building Co., Inc., McCoskey St., West of Hanover St., Baltimore 20, Md.  
 Massachusetts Gear & Tool Co., 30 Nashua St., Woburn, Mass.  
 Master Electric Co., 124 Davis Ave., Dayton 1, Ohio  
 Matheson Co., Inc., Richard St. & Manhattan Rd., Joliet, Ill.  
 Matheson Co., 277 Peterson Plank Rd., East Rutherford, N.J.

Mayhew Supply Co., 4700 Seyens Rd., Dallas, Texas  
 MAYO TUNNEL & MINE EQUIP., LANCASTER, PA.  
 MCCLINTOCK CO., (WORLD MINING ONLY)  
 SPOKANE, WASH.  
 McDonald Mfg. Co., 12th & Pine St., Dubuque, Iowa  
 McDonald Co., E. F., 5721 W. 94 St., Los Angeles 48, Calif.  
 McDonald, T. J., 14405 St. Marys, Detroit 27, Mich.  
 McKislin Prod., Corp., 2357 Dawson Rd., Tulsa, Oklahoma  
 McLanahan & Stone Corp., Hollidaysburg, Pa.  
 McLaughlin Mfg. Co., 801 E. Cass St., Joliet, Ill.  
 McNally Pittsburgh Mfg. Corp., Drawer D, Pittsburgh, Pa.  
 Mehler & Assoc., Alan, 69 E. 42nd St., N.Y. 17, N.Y.  
 MEISSNER ENGR. INC., JOHN P., 385 W. WASHINGTON, CHICAGO 4, ILL.  
 Messner Engineering & Mfg. Co., Inc., Commack, L.I. N.Y.  
 Menlo Research Lab., Box 822, Menlo Park, Calif.  
 Merck & Co., Rahway, N.J.  
 Meredith Co., Inc., Wm. C., Box 31, Atlanta, Ga.  
 Merens Instrument Co., 10939 Madison Ave., Cleveland 3, Ohio  
 MERRICK SCALE MFG. CO., 188 AUTUM ST., PASSAIC, N.J.  
 Merrill Co., 582 Market St., San Francisco 4, Calif.  
 Metal Carbides Corp., 107 E. Indiana Ave., Youngstown, Ohio  
 Metal & Thermic Corp., 100 E. 42nd St., New York 17, N.Y.  
 Metron Instrument Co., 432 Lincoln St., Denver, Colo.  
 Metallurgical Prod. Co., 35th & Moore St., Philadelphia 45, Pa.  
 Mexico Refrigerator Co., Mexico, Mo.  
 Meyerowitz, Inc., Leo, 1650 Broadway, New York 19, N.Y.  
 Meyers Safety Switch Co., Inc., 423 Tehama St., San Francisco 3, Calif.  
 Mitchell Mfg. Co., 101 Sherman Ave., New York 34, N.Y.  
 Michigan Pipe Co., 6581 Mill St., Gagetown, Bay, Mich.  
 Michigan Tool Co., Manistee Iron Works, Manistee, Mich.  
 Michigan Wire Cloth Co., 2109 Howard St., Detroit 16, Mich.  
 Michels Printing Press & Mfg. Co., Star-Kimble Motor Div., 208 M. Bloomfield Ave., Bloomfield, N.J.  
 Micro Metallic Corp., 30 Sea Cliff Ave., Glen Cove, N.Y.  
 Micro Switch, div. of Minneapolis-Honeywell Regulator Co., Freeport, Ill.  
 Midwest Piping Co., Inc., 1450 E. 2nd St., St. Louis 4, Mo.  
 Mill & Mine Supply, Inc., 625 Lander St., Seattle 4, Wash.  
 MILLER, ARNOLD H., 120 BROADWAY, NEW YORK CITY 5, N.Y.  
 Miller Electric Mfg. Co., Inc., Appleton, Wis.  
 Miller Equipment Co., Inc., 12th & New Sts., Franklin, Pa.  
 Miller Machinery Co., Box 1496, Missoula, Montana  
 Mills Iron Works, Inc., 929 North Main St., Los Angeles, Calif.  
 Minerals & Metals, 55 Rue D'Amsterdam, Paris 8, France  
 Minerals Engineering Co., 417 S. Hill St., Los Angeles 13, Calif.  
 Minerals Engr. Co., P.O. Box 1951, Grand Junction, Colorado  
 Minerals Exploration Research Corp., 3120 Ford St., Golden, Colo.  
 Minerals Laboratory, 1393 Grant St., Silver City, New Mexico  
 Minerec Corp., 130 Broadway, New York, N.Y.  
 MINE SAFETY APPLIANCES CO., 301 N. BRADDOCK AVE., PITTSBURGH 8, PA.  
 MINE & SMELTER SUPPLY CO., P.O. BOX 3374, DENVER 2, COLO.  
 Mines Foundry & Mfg. Co., 200 Spring St., Nevada City, Calif.  
 Miners Hardware Supply, 523 Brushon Ave., Pittsburgh 21, Pa.  
 Minneapolis-Honeywell Div., Holland Div., 130 E. 5th Ave., Denver 3, Colo.  
 Minneapolis-Honeywell Regulator Co., Industrial Div., Wayne & Windrim Avenues, Philadelphia 44, Pa.  
 Minneapolis-Moline Co., Minneapolis 1, Minn.  
 Minnesota Mfg. & Mfg. Co., Irvington Vauxhall Bldg., Div. 6 Argyle Terrace, Irvington 11, N.J.  
 Minocor Belting Co., 1081 S. Grand Blvd., St. Louis 4, Mo.  
 Mitermobile Mfg. Inc., 8037 N.E. Killingsworth, Portland 20, Ore.  
 Moab Drilling Co., Box 847, Moab, Utah  
 Mohr Drilling, Inc., 600 North Pennsylvania St., Indianapolis 4, Ind.  
 Moloney Electric Co., 5399 Bitcher Blvd., St. Louis 20, Mo.  
 Mona Industries, Inc., Paterson 4, N.J.

Monsanto Chemical Co., 1700 E. Second St., St. Louis 4, Mo.  
 Montgomery Belting & Leather Co., 70 S. Canal St., Akron 8, Ohio  
 Moon Mfg. Co., 128 N. Jefferson St., Chicago 6, Ill.  
 MORRIS MACHINE WORKS, BALDWINVILLE, N.Y.  
 Morse Bros. Machinery Co., 2300 Brighton Blvd., Denver, Colo.  
 Morse Chain Co., 7601 Central Ave., Detroit 10, Mich.  
 Mosbach Electric & Supply Co., 1118 Arlington Ave., Pittsburgh 3, Pa.  
 Motor Generator Corp., W. Water St., Troy, Ohio  
 Motorola Communication & Electronics, Inc., Augusta Blvd., Chicago 51, Ill.  
 Mott Core Drilling Co., Mott Bldg., Huntington, W. Va.  
 Mueller Brass Co., 1925 Lapeer Ave., Port Huron, Mich.  
 Multi-Matic Corp., 14741 Benemer St., Van Nuys, Calif.  
 MURPHY, F. M., CONSULTING GEOL., 1261 MARYLAND PARKWAY, LAS VEGAS, NEV.  
 Myers-Whaley Co., Inc., P. O. Box 789, Knoxville 1, Tenn.

## N

Nagle Pumps, Inc., 1250 Center Ave., Chicago Heights, Ill.  
 Nash Engr. Co., South Norwalk, Connecticut  
 National Abroll Burner Co., 1254 E. Sedgley Ave., Philadelphia 34, Pa.  
 National Carbide Co., 60 E. 42nd St., N.Y. 17, N.Y.  
 National Cylinder Gas Co., 840 N. Michigan Ave., Chicago 11, Ill.  
 National Electric Products Corp., 3 Gateway Center, Pittsburgh 23, Pa.  
 National First Aid Supply Co., 28 W. 15th St., N.Y. 11, N.Y.  
 National Filter Media Corp., 1717 Dixwell Ave., New Haven, Conn.  
 National Fuse & Powder Co., 3801 Delgany St., Denver 8, Colorado  
 NATIONAL IRON CO., 56TH AVE., DULUTH 7, MINN.  
 NATIONAL MALLEABLE & STEEL CASTINGS CO., 10490 QUINCY AVE., CLEVELAND 6, OHIO  
 National Mine Service Co., P. O. Box 32, Beckley, W. Va.  
 National Powder Co., Eldred, McKean County, Pa.  
 National Screw & Mfg. Co., Chester Hoist Div., Lisbon, Ohio  
 National Supply Co., 2 Gateway Center, Pittsburgh 23, Pa.  
 National Supply Co., Engine Div., 1401 Sheridan Ave., Springfield, Ohio  
 National Tank & Pipe Co., 2391 N. Columbia Blvd., Portland 17, Ore.  
 Naylor Pipe Co., 1241 E. 92nd St., Chicago 19, Ill.  
 Neal Machinery Co., H. T., 57 Post St., San Francisco, Calif.  
 Nef & Fry Co., The, 158 S. Main St., Camden, Ohio  
 New Bedford Cordage Co., 131 Court St., New Bedford, Mass.  
 New Jersey Motor Co., 120 Waynewood Park, Plainfield, New Jersey  
 New World Exploration, Res. & Dev. Corp., 601 Arredona Ave., Van Nuys, Calif.  
 New York Air Brake Co., The, Aurora Pump Div., Aurora, Ill.  
 NEW YORK ARIZONA DEVELOPMENT CORP., 614 MAYER-HEARD BLDG., PHOENIX, ARIZ.  
 New York Belting & Packing Co., 1 Market St., Passaic, N.J.  
 N.Y. & N.J. Lubricant Co., 292 Madison Ave., New York 17, N.Y.  
 New York Stubber Corp., 160 Park Ave., N.Y. 17, N.Y.  
 Newage International, Inc., 235 E. 42nd St., N.Y. 17, N.Y.  
 Newark Wire Cloth Co., 370 Verona Ave., Newark 4, N.J.  
 Newbery Electric Corp., 1038 Venice Blvd., Los Angeles 15, Calif.  
 Newport Industries, Inc., 230 Park Ave., New York, N.Y.  
 Nice Ball Bearing Co., 26th & Hunting Park Ave., Philadelphia, Pa.  
 Nichols Engineering & Research Corp., 70 Pine St., New York & N.Y.  
 Nitrox Co., Inc., The, Peoria, Ill.  
 Nolan Co., Bowerton, Ohio  
 NORDBERG MFG. CO., MILWAUKEE 1, WIS.  
 Norma-Hoffman Bearings Corp., Stamford, Conn.  
 North American Mfg. Co., 4455 East 71st St., Cleveland 8, Ohio  
 North American Phillips Co., 750 S. Fulton St., Mount Vernon, N.Y.  
 North American Refractor Co., 1012 Nat'l. City Bldg., 8th & Cleveland 14, Ohio  
 NORTHERN BLOWNE CO., 6439 BARBERTON AVE., CLEVELAND 2, OHIO  
 Northern Conveyor Co., P. O. Box 48, Jannsville, Va.



Northern Engr. Wks., 210 Chene St., Detroit 7, Mich.  
**NORTHWEST ENGR. CO.**, 135 S. LASALLE ST., CHICAGO 3, ILL. .... 88  
 Northwestern Electric Co., 1750 N. Springfield Ave., Chicago 47, Ill.  
 Norton Co., 1 New Bond St., Worcester 6, Mass.  
 Norwalk Co., Inc., North Water St., South Norwalk, Conn.  
 Novo Engine Co., 783 Porter St., Lansing 5, Mich.  
 Nuclear Instrument & Chemical Corp., 233 W. Erie St., Chicago 12, Ill.  
**NUCLEONIC CO. OF AMERICA**, 194 DEGRAUW ST., BROOKLYN 31, N.Y. ... 97



Ogden Iron Works Co., Ogden, Utah  
 Ohio Brass Co., 380 North Main St., Mansfield, Ohio  
 Ohio Carbon Co., 12508 Berea Rd., Cleveland 31, Ohio  
 Ohio Electric Mfg. Co., 5900 Maurice Ave., Cleveland 27, Ohio  
 Ohio Forge & Mach. Corp., 3010 Woolhill Rd., Cleveland 4, Ohio  
 Ohio Gear Co., 1333 E. 179th St., Cleveland 10, Ohio  
 Ohio Grease Co., 514-519 N. Spring St., Londonville, Ohio  
 Ohio Hoist & Mfg. Co., 13124 Shaker Sq., Cleveland 20, Ohio  
 Ohio Injector Co., The, Wadsworth, Ohio  
 Oilgear Co., 1601 W. Pierce St., Milwaukee 4, Wis.  
 Okadec Co., 332 S. Michigan Ave., Chicago 4, Ill.  
 Okonite Co., Hazard Insulated Wire Works Div., 72 Haas St., Wilkes-Barre, Pa.  
 Olin Industries, Inc., Explosives Div., East Alton, Ill.  
 Oliver Corp., 400 W. Madison St., Chicago 6, Ill.  
 Oliver Corp., A. B. Farquhar Div., 143 N. Duke St., York, Pa.  
 Oliver Iron & Steel Corp., S. 10th & Muriel Sts., Pittsburgh 3, Pa.  
**Omega Machine Co.**, 548 Harris Ave., Providence 1, Rhode Island  
 Onan Sons, Inc., D. W. University Ave., S. E. at 25th, Minneapolis 14, Minn.  
 O P W Corp., 2735 Colerain Ave., Cincinnati 25, Ohio  
 Orange Roller Bearing Co., Inc., Orange, N.J.  
 Onorite Chemical Co., 39 Sansome St., San Francisco 4, Calif.  
 Osgood-General P. O. Box 515, Marion, Ohio  
 Oshkosh Motor Truck, Inc., 2300 Oregon St., Oshkosh, Wis.  
 Osmose Wood Preserving Co. of America, Inc., 909 Elliott St., Buffalo 6, N.Y.  
 Overstrom & Sons, 2213 W. Mission Rd., Alhambra, Calif.  
 Owen Bucket Co., The, 6001 Breakwater Ave., Cleveland 2, Ohio



**Pacific Car & Foundry Co.**, 4th & Factory, Renton, Wash. .... 101  
 Pacific Coast Engr. Co., Oak & Conant Sts., Alameda 6, Calif.  
**PACIFIC FOUNDRY CO. LTD.**, 3100 19TH ST., SAN FRANCISCO 10, CALIF. ... 125  
 Pacific Gear & Tool Works, Inc., 1088 Folsom St., San Francisco 3, Calif.  
 Pacific Pipe Co., 461 Folsom St., San Francisco, Calif.  
 Pacific Wire Rope Co., 1840 E. 13th St., Los Angeles, Calif.  
 Pacific Wood Tank Corp., 461 Market St., San Francisco 5, Calif.  
 Page Belting Co., Concord, N.H.  
 Page Engineering Co., Clearing Post Office, Chicago 55, Ill.  
 Palmer & Decker, 163 W. Lime St., Bishop, Calif.  
 Palmer-Bee Co., 1701 Poland Ave., Detroit 12, Mich.  
 Pan-Am Southern Corp., 1040 St. Charles Ave., New Orleans 6, La.  
 Pangborn Corp., 629 Pangborn Blvd., Hagerstown, Maryland  
 Pantex Mfg. Corp., 521 Roosevelt Ave., Central Falls, R.I.  
 Paragon-Revolite Corp., 137 S. Ave., Rochester 5, N.Y.  
 Parker Electrical Mfg. Co., 221 Washington St., Oakland 7, Calif.  
 Parker Safety Equip. Co., 735 Lyons Ave., Irvington 11, N.J.  
 Parsons Engineering Corp., 4590 Beldier Rd., Willoughby, Ohio  
 Partrick & Wilkins Co., 51 North 7th St., Philadelphia 3, Pa.  
 Patrick, Inc., R. S. Sellwood Bldg., Duluth 2, Minn.  
 Paulsen-Webber Cordage Corp., 170 John St., N.Y. 38, N.Y.  
**PEALE, ROGERS**, 315 MONTGOMERY ST., SAN FRANCISCO, CALIF. .... 123

Pease Co., C. F., 2601 W. Irving Pk. Road, Chicago 18, Ill.  
 Peerless Electric Co., Warren, Ohio  
 Peerless Machine Co., 1680 Junction Ave., Racine, Wis.  
 Pease & Co., Inc., Earl H., 2150 Washington Ave., San Leandro, Calif.  
 Pendleton Woolen Mills, P.O. Box 276, Washougal, Wash.  
 Penn Industrial Instrument Corp., 4110 Haverford Ave., Philadelphia, Pa.  
 Penn Machine Co., 108 Station St., Johnstown, Pa.  
 Penn Mfg. & Supply Co., 45 Westminster St., Wilkes-Barre, Pa.  
**PENNSYLVANIA CRUSHER CO.**, WEST CHESTER, PA. .... 114  
 Pennsylvania Drilling Co., 1206 Chartiers Ave., Pittsburgh 20, Pa.  
 Pennsylvania Electric Coal Corp., 1301 Sawmill Run Blvd., Pittsburgh 26, Pa.  
 Pennsylvania Pump & Compressor Co., Easton, Pa.  
 Pennsylvania Transformer Co., P. O. Box 339, Canonsburg, Pa.  
 Perkins Machine & Gear Co., Circuit Ave., West Springfield, Mass.  
 Permo Exploration Co., Nye, Montana  
 Permutit Co., 330 W. 42nd St., New York, N.Y.  
 Peterson Filters & Engr. Co., 127 Social Hall Ave., Salt Lake City, Utah  
 Pettibone Mulliken Corp., 4710 W. Division St., Chicago 51, Ill.  
 Phelps Dodge Refining Corp., 40 Wall St., New York 6, N.Y.  
 Phelps Dodge Copper Prod. Corp., 40 Wall St., New York 6, N.Y.  
 Philadelphia Belting Co., 6th & Spring Garden Sts., Philadelphia 23, Pa.  
 Philadelphia Gear Works, Inc., Erie Ave. & G. St., Philadelphia 24, Pa.  
 Philadelphia Quartz Co., 1146 Public Ledger Bldg., Philadelphia 6, Pa.  
 Phillips Corp., Arch St., Carnegie, Pa.  
 Phoenix Prod. Co., 4715 N. 27th St., Milwaukee 16, Wis.  
 Pierce, Roger V., 808 Newhouse Bldg., Salt Lake City 4, Utah  
 Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis, Minn.  
 Pioneer Rubber Mills, 353 Sacramento St., San Francisco 11, Calif.  
 Pinassa, c/o Petnam Industrial Prod., 608 5th Ave., N.Y. 20, N.Y.  
 Pitkin, Inc., Lucia, 47 Fulton St., New York 38, N.Y.  
 Pittsburgh Lectromelt Furnace Corp., P.O. Box 1257 Pittsburgh 30, Pa.  
 Pittsburgh Reflector Co., 403 Oliver Bldg., Pittsburgh 22, Pa.  
 Plibrico Co., 1500 Kingsbury St., Chicago 14, Ill.  
 Plummer Mfg. Co., W. A., 753 S. San Pedro St., Los Angeles 14, Calif.  
 Pollock Co., Wm. B., 101 Andrews Ave., Youngstown, Ohio  
 Poole Foundry & Mach. Co., 1700 Union Ave., Baltimore 11, Md.  
 Porter Cable Mach. Co., 1714 N. Salvia St., Syracuse 8, N.Y.  
 Porter Co., Inc., H. K., Leschen Wire Rope Div., 2727 Hamilton Ave., St. Louis, Mo.  
 Porter Co., Inc., H. K., Quaker Rubber Co., Div., Philadelphia, Pa.  
 Porter Co., Inc., H. K., Watson Stillman Co., Div. of, 109 Aldene Road, Roselle, N.J.  
 Portland Woolen Mills, Inc., P.O. Box 2620, Portland 3, Ore.  
 Post Co., Frederick, 155 E. Ohio, Chicago, Ill.  
 Post Glove Electric Co., The, 231 W. Third St., Cincinnati, Ohio  
 Power Craft Corp., 2215 Dekalb, St. Louis 4, Mo.  
 Power Equip. Co., 3440 Brighton Blvd., Denver, Colo.  
 Power Plants, Inc., 1755 W. 33rd St., Cleveland 14, Ohio  
 Prat Daniel Corp., 2 Meadow St., So. Norwalk, Conn.  
 Pratt, Wm. H., 135 Grand Ave., Susanville, Calif.  
**PRECISION RADIATION INSTRUMENTS, INC.**, 2235 S. LA BREA, LOS ANGELES 16, CALIF. .... 391  
 Pressed & Welded Products Co., 515 Allegheny Ave., Oakmont, Pa.  
 Prest-O-Lite Battery Co., Inc., P.O. Box 951, Toledo 1, Ohio  
 Price, Franklin L. C., 1105 Northern Life Tower, Seattle 1, Wash.  
 Process Engineering, Inc., 624 Somerville Ave., Somerville, Mass.  
 Productive Equipment Corp., 2026 W. Lake St., Chicago 12, Ill.  
 Provo Foundry & Machine Co., 385 E. Ninth South, Provo, Utah  
 Pulmosan Safety Equip. Corp., 644 Pacific St., Brooklyn 17, N.Y.  
 Pulva Corp., 556 Hight St., Perth Amboy, N.J.  
 Pure Oil Co., 35 E. Wacker Dr., Chicago 1, Ill.  
 Pyre-National Co., The, 1234 N. Kostner Ave., Chicago 51, Ill.  
 Pyrex C-O-Two, P.O. Box 390, Newark 1, N.J.  
 Pyrometer Instrument Co., Inc., 93 Portland Ave., Bergenfield, N.J.



**Quaker Rubber Co.**, Philadelphia 24, Pa.  
 "Quick-Way" Truck Show Co., 2401 E. 40th Ave., Denver, Colo.  
 Quigley Co., Inc., 627 5th Ave., New York 17, N.Y.



Radice Co., Inc., 430 5th Ave., New York 17, N.Y.  
 Rahmann & Co., Inc., Geo., 31 Spruce St., N.Y. 33, N.Y.  
 Ramo Ajax Div., American Brake Shoe Co., 322 S. Michigan Ave., Chicago 4, Ill.  
 Ranville Co., 7-241 Pearl St., N. W. Grand Rapids, Mich.  
 Rawlup Co., Inc., 271 Church St., N.Y. 13, N.Y.  
 Rawson Electrical Instrument Co., 110 Potter St., Cambridge 42, Mass.  
 Rayboston-Manhattan, Inc., 61 Willett St., Passaic, N.J.  
 Ray-O-Vac Co., 212 E. Washington Ave., Madison 10, Wis.  
 Reading Crane & Hoist, 2100 Adams St., Reading, Pa.  
 Ready Power Co., 3828 Grand River Ave., Detroit 8, Mich.  
 Recovery, Inc., 2614 N. E. 25th Ave., Portland 12, Ore.  
 Reeves Pulley Co., 1225-7th St., Columbus, Ind.  
**REICH BROS. MFG. CO.**, 1439 ASH ST., TERRE HAUTE, IND. .... 70  
 Reilly Tar & Chemical Corp., 1615 Merchants Bank Building, Indianapolis 4, Ind.  
 Reinhardt, Elmer, 202 N. 7th St., Grand Junction, Colo.  
 Reliance Electric & Engineering Co., 1093 Ivanhoe Rd., Cleveland 10, Ohio  
 Remaly Mfg. Co., Cedar St., Tamaqua, Pa.  
**REMINGTON ARMS CO., INC.**, 939 BARNUM AVE., BRIDGEPORT 2, CONN. .... 246  
 Republic Croscoting Co., 1615 Merchant Bank Bldg., Indianapolis 4, Ind.  
 Republic Rubber Div., Lee Rubber & Tire Corp., Albert St., Youngstown, Ohio  
 Republic Steel Corp., Republic Bldg., Cleveland 1, Ohio  
 Republic Steel Corp., Trucon Steel Div., Albert St., Youngstown 1, Ohio  
 Republic Supply Co., 2600 S. Eastland Ave., Los Angeles, Calif.  
 Research Cottrell, Inc., Bound Brook, N.J.  
 Research Inc., 1511 Lence St., P.O. Box 10243, Dallas, Texas  
 Restato-Loy Co., 127 Baylis St., S.W., Grand Rapids 7, Mich.  
 Revere Copper & Brass Inc., 330 Park Ave., New York 17, N.Y.  
 Revere Electric Mfg. Co., 6909 Broadway, Chicago 40, Ill.  
 Rhoads & Son, J.E., 35 N. Sixth St., Philadelphia 3, Pa.  
**RIBLET AERIAL TRAMWAY CO.**, N. 1231 WASHINGTON ST., SPOKANE, WASH. .... 128  
 Richards-Wilcox Mfg. Co., 515 3rd St., Aurora, Ill.  
 Richardson Seale Co., 688 Van Houten Ave., Clifton, N.J.  
 Ridge Equip. Co., Fallentimber, Pa.  
 Robbins & Myers, Inc., 1346 Lagonda Ave., Springfield, Ohio  
 Roberts & Schaefer Co., 180 N. Wells St., Chicago 6, Ill.  
 Robertshaw-Fulton Controls Co., 110 E. Otterman St., Greensburg, Pa.  
 Rockbestos Products Corp., Nicoll & Canner Sts., New Haven, Conn.  
 Rockwell, Inc., Marlin, Jamestown, N.Y.  
 Rockwell Mfg. Co., 460 N. Lexington Ave., Pittsburgh 3, Pa.  
 Rocky Mtn. Instrument Co., 1410-16th St., Denver, Colo.  
 Roder-Blackburn Intl. Corp., 149 Broadway, N.Y. 6, N.Y.  
 Roehling's Sons Corp., John A., 540 E. Broad St., Trenton 2, N.J.  
 Rogers Brothers Corp., Albion, Pa.  
 Rogers Iron Works Co., Joplin, Mo.  
 Roller Bearing Co. of America, Trenton 2, N.J.  
 Rollway Bearing Co., Syracuse 1, N.Y.  
 Rome Cable Corp., Rome, New York  
 Root & Simpson, Inc., 1510 E. 17th Ave., Denver 18, Colo.  
 Roots-Connersville Flower Corp., 900 W. Mount St., Connersville, Ind.  
 Ross Mfg. Co., 2766 West Barbary Place, Denver, Colo.  
**ROSS SCREEN & FEEDER CO.**, 190 QUIMBY ST., WESTFIELD, N.J. .... 255  
 Roth Co., Roy, 2420 4th Ave., Rock Island, Ill.  
 Rotron Mfg. Co., Schoonmaker Lane, Woodstock, N.Y.  
 Round Chain Co's., Broadway & Chalmers Sts., Cleveland 8, Ohio

Round, Davis & Son, Inc., P. O. Box 668,  
Cleveland 22, Ohio.  
Round Woodhouse Chain & Mfg. Co., 261  
Third St., Trenton, N.J.  
Rowan Controller Co., 2313 Homewood Ave.,  
Baltimore 18, Md.  
Ruth Co., The, Denver 2, Colo.  
Ryerson, Joseph T. & Son, Inc., 2365 W. 16th  
St., Chicago 5, Ill.

## S

Sadtler & Son, Inc., Samuel P., Box 1517,  
Philadelphia 2, Pa.  
Safety Clothing & Equip. Co., 1000 E. 69  
St., Cleveland 10, Ohio.  
Safety Fire Extinguisher Co., 290 Seventh St.,  
N.Y. 1, N.Y.  
Safety First Supply Co., 425 Magee St.,  
Pittsburgh 19, Pa.  
Sahara Oil Co., 25 E. Main St., DuQuoin, Ill.  
SALEM TOOL CO., 767 S. ELLSWORTH  
AVE., SALEM, OHIO ..... 113  
Sandercock Cyclone Drill Co., 187 E. Main  
St., Orrville, Ohio.  
Sanford-Day Iron Works, Inc., Dale Ave.,  
(Box 1811), Knoxville, Tenn.  
Santa Fe Tank & Tower Co., 3481 E. Boyle  
Ave., Los Angeles 26, Calif.  
Saraceno Tank & Welding Co., 141 E. Maple  
Ave., So. San Francisco, Calif.  
Saugen Derrick Co., 3101 Grand Ave., Chicago,  
Ill.  
SAUERMAN BROS., INC., 635 E. 25TH AVE.,  
BELLWOOD, ILL. .... 116  
Savage Co., W. J., 915 W. Clinch Ave.,  
Knoxville, Tenn.  
Savage Mfg. Co., 17 E. Buchanan St., Phoenix,  
Arizona.  
Sawyer Bailey Corp., 1889 Niagara St.,  
Buffalo 15, N.Y.  
Sawyer Belt Hook Co., 18 Warren Ave.,  
Fairchester, Md.  
Saylor Electric Products Corp., 1014 Lynn  
St., Detroit 11, Mich.  
Saylor Electric Prod. Corp., 277 Pierce St.,  
Birmingham, Mich.  
SCANDINAVIAN ORE TANKERS, PUBLIC  
LEDGER BLDG., PHILADELPHIA 6, PA.  
SCHAEFFER FOUNDRY CO., 2629  
SMALLMAN ST., PITTSBURGH 22, PA.  
Schaeble Co., D. T. Williams Valve Div.,  
Mariemont Ave., Cincinnati, Ohio.  
Schaeble Co., 1088 Summer St., Cincinnati  
& Ohio.  
Schield Bantam Co., Waverly, Iowa.  
Schieren Co., Chas. A., 39 Ferry St., New  
York 38, N.Y.  
Schneible Co., Claude R., 212 Stephenson  
Bldg., Detroit, Mich.  
Schneider Mfg. Corp., 315 N. Franklin St.,  
Muncie, Ind.  
Schraumm, Inc., West Chester, Pa.  
Schroeder Bros., 3118 Penn Ave., Pittsburgh  
1, Pa.  
Schutte & Koerting Co., Cornwells Heights,  
Bucks County, Pa.  
Scranton Electric Constr. Co., 635 Connell  
Bldg., Scranton 3, Pa.  
Screen Equip. Co., Inc., Buffalo 25, N.Y.  
Seismograph Service Corp., P.O. Box 1590,  
Tulsa 1, Okla.  
Seltstrom Mfg. Co., 251 E. Hicks Rd., Palestine,  
Ill.  
Sepor Microsplitter Supply, 1545 E. Oak Park  
Ave., Berwyn, Ill.  
Service Supply Corp., 20th & Erie Ave.,  
Philadelphia 31, Pa.  
Sharplin Chemicals Inc., 1100 Widener Bldg.,  
Philadelphia 7, Pa.  
Shawinigan Prod. Corp., 350 5th Ave., N.Y. 1,  
N.Y.  
SHEDWICK, JR., WM. J., REFORMA 24-342;  
Mexico 1, D. F. .... 123  
SHEFFIELD STEEL CORP., SHEFFIELD  
STATION, KANSAS CITY 25, MO.  
WM 123 (WORLD MINING ONLY)  
Shell Oil Co., 58 W. 58th St., New York  
30, N.Y.  
Shepard Niles Crane & Hoist Corp., Man-  
teua Falls, N.Y.  
Sheppard Co., R. H., Hanover, Pa.  
Shipport Mfg. Co., 414 O. & Galena Ave.,  
Dixon, Ill.  
Shriver Co., F. W., 9708 Washington Blvd.,  
Culver City, Calif.  
Shriver & Co., Inc., T., 882 Hamilton St.,  
Harrison, New Jersey.  
Shunk Mfg. Co., Auto Ave., Bucyrus, Ohio.  
Sight Feed Generator Co., West Alexandria,  
Ohio.  
Signal East & Mfg. Co., Long Branch, N.J.  
Silver Co., S. B., 1025-South 3rd St., Min-  
neapolis 15, Minn.  
Sloan Hoist & Crane Co., 341 33rd St.,  
Brooklyn 30, N.Y.  
Simonds Worden White Co., Dayton 7, Ohio.  
Simplex Wire & Cable Co., 79 Sidney St., Cam-  
bridge 35, Mass. .... 250, 251  
Simslectric Engineering Co., Durand, Mich.  
Sisclair Refining Co., 400 Fifth Ave., N.Y. 26,  
N.Y.  
Sintering Machinery Corp., Dwight Lloyd Div.,  
Netcong, N.J.

SKF Industries, Inc., Front St. & Erie  
Ave., Philadelphia 32, Pa.  
Skockum Co., 5544 N. Crawford St., Port-  
land 2, Ore.  
Sly Mfg. Co., W. W., 4790 Train Ave., Cleve-  
land 2, Ohio.  
SMITH & CO., F. L., 11 WEST 42 ST., NEW  
YORK 36, N.Y. .... 20  
SMIT & CO., INC., ANTON, 223 WEST 52ND  
ST., NEW YORK 19, N.Y. .... 97  
Smith & Sons, Inc., J. K., Murray Hill, New  
Jersey.  
Smith & Co., Gordon, 348 College St., Bowling  
Green, Ky.  
SMITH-EMERY CO., 751 EAST WASHING-  
TON BLVD., LOS ANGELES 21, CALIF.  
..... 123  
Smith Engineering Works, 802 E. Capitol  
Drive, Milwaukee 12, Wis.  
Smith Power Transmission Co., 1546 E. 33rd  
St., Cleveland 14, Ohio.  
Smith & Serrell, Inc., 210 Washington St.,  
Newark 2, N.J.  
Smith Welding Equipment Corp., 2635-4th  
St. & E., Minneapolis 14, Minn.  
Snap-Uts, Inc., 291 Titusville Rd., Union City,  
Pa.  
Snell Inc., Foster D., 29 West 15th St., New  
York 11, N.Y.  
Snyders Mine & Chem. Laboratories, P. O.  
Box 312, Rickland, Ore.  
Snyder & Son, Inc., M. L., 1311 E. Boston  
Ave., Philadelphia 25, Pa.  
Socony-Vacuum Oil Co., 24 Broadway, New  
York 4, N.Y.  
Sonnaborn Sons, Inc., L., 309 4th Ave., New  
York 16, N.Y.  
Sorel Steel Foundries Ltd., 1405 Peel St.,  
Montreal, Quebec, Canada.  
Sorgel Electric Co., National Ave., Milwaukee,  
Wis.  
Southern Carbon Brush Co., Inc., 7 S.W. 10th  
St., Birmingham 1, Ala.  
Southwest Welding & Mfg. Co., 3021 W. Mis-  
sion Rd., Alhambra, Calif.  
Southwestern Engineering Co., 4899 Santa  
Fe Ave., Los Angeles 58, Calif.  
Southern Friction Materials Co., PO Box 1475,  
Charlotte 1, N.C.  
Spang & Co., Etna St., PO Box 751, Butler,  
Pa.  
Spanaki & Williamson, PO Box 151, Spring-  
field, Ill.  
Sparco Wire Co., Railroad St., Rome, N.Y.  
Speer Carbon Co., St. Marys, Pa.  
Spencer Turbine Co., 450 New Park Ave.,  
Hartford 6, Conn.  
Sperli Faraday, Inc., 1222 E. Church St.,  
Adrian, Mich.  
SPRAGUE & HENWOOD, INC., BOX 446,  
SCRANTON 2, PA. .... 211, 212  
Spray Engineering Co., 114 Central St.,  
Somerville, Mass.  
Springfield Boiler Co., PO Box 1000 Spring-  
field, Ill.  
Sprout, Waldron & Co., Inc., Maney, Pa.  
St. Clair, John Q., 439V Main St., Grand Junc-  
tion, Colo.  
St. Clair, John Q., 536 Buchanan Ave., Nor-  
man, Okla.  
St. Regis Paper Co., 280 Park Ave., N.Y. 17,  
N.Y.  
Stackpole Carbon Co., Tannery St., St. Marys,  
Pa.  
Stainless Welded Products, Inc., 251 Cornell-  
son Ave., Jersey City 2, N.J.  
Stamler Co., The, M. R., Paris, Ky.  
STANCO MFG. & SALES, INC., 1931 PON-  
TUS ST., LOS ANGELES, CALIF. .... 117  
Standard Electric Mfg. Co., Inc., Haddon Ave.,  
West Berlin, N.J.  
STANDARD OIL CO. OF CALIF., 325 BUSH  
ST., SAN FRANCISCO, CALIF. .... 200  
Standard Oil Co. of Ind., 910 South Michi-  
gan, Chicago, Ill.  
STANDARD STEEL CORP., 5281 BOYLE  
AVE., LOS ANGELES 58, CALIF. .... 19  
Standard Transformer Co., 121 Dana St., War-  
ren, Ohio.  
Stanley Co., Inc., Wm. W., 401 Broadway,  
New York 18, N.Y.  
Staplex Co., The, 777 Fifth Ave., Brooklyn,  
N.Y.  
Stardust-Krystone Co., 929 17th St., Beaver  
Falls, Pa.  
Star Expansion Bolt Mfg. Corp., 147 Cedar St.,  
N.Y. 6, N.Y.  
Star Wire Screen & Iron Works, Inc.,  
2515 San Fernando Road, Los Angeles  
45, Calif.  
States Co., 19 New Park Ave., Hartford 6,  
Conn.  
STEARNS MAGNETIC, INC., 485 E. 28TH  
ST., MILWAUKEE 46, WIS. .... 272  
STEARNS ROGER MFG. CO., 640 BANNOCK  
ST., DENVER, COLO. .... 269  
Steiner Mfg. Co., 2700 Roosevelt Rd., Broad-  
view, Ill.  
Steincraft Mfg. Co., Blue Ash Road, Rome-  
moore, Ohio.  
Stefco Mfg. Co., PO Box 25, Cincinnati, Ohio.  
Stein, Hall & Co., Inc., 235 Madison Ave.,  
N.Y. 17, N.Y.  
Stephan Corp., 2022 Broadway, Sacramento  
18, Calif.  
STEPHENS-ADAMSON MFG. CO., RIDGE-  
WAY AVE., AURORA, ILL. .... 257  
Stephenson, Robert C., Economic Geologist,

Rm. 2500, Girard Trust Bldg., Philadel-  
phia 2, Pa.  
Sterling Electric Motors, Inc., 5401 Telegraph  
Bldg., Los Angeles 25, Calif.  
Sterling Grinding Wheel Co., Tiffin, Ohio.  
Sterling Siren Fire Alarm Co., Inc., Rochester  
& N.Y.  
Steward-Warner Corp., 1826 Diversity Parkway,  
Chicago 14, Ill.  
STILL, ARTHUR R., MINING GEOLOGIST,  
BOX 1512, PRESCOTT, ARIZ. .... 123  
Stimmel Winch Co., Inc., 5724 33rd St., L.I.C.  
1, N.Y.  
Stoody Co., 11049 A. East Elmhurst Ave.,  
Whittier, Calif. .... 108  
Stowell & Co., W. H., 421 Sprague Ave.,  
Spokane 4, Wash.  
Strub Mfg. Co., Inc., 2283 Baldwin St., Oak-  
land 21, Calif.  
Streeter-Ames Co., 4101 N. Ravenwood, Chi-  
cago 13, Ill.  
Strong, Carlisle & Hammond Co., 1392 W. 3rd  
St., Cleveland, Ohio.  
Struthers-Dunn, Inc., Lambs Rd., Petman, N.J.  
Stuck-Slicks Co., 184 Lafayette St., Newark  
& N.J.  
STURTEVANT MILL CO., 123 CLAYTON ST.,  
BOSTON 22, MASS. .... WM 18  
(WORLD MINING ONLY)  
Superior Carbon Prod., Inc., 9115 George Ave.,  
Cleveland 5, Ohio.  
Superior-Lidgerwood-Mundy Corp., 1101 John  
Ave., Superior, Wisconsin.  
Sutorbilt Corp., 2005 E. Slawson Ave., Los An-  
geles 59, Calif.  
Sutphen, Peter O., Box 25, Everett, Pa.  
Sutton, Steele & Steele, Inc., 1031 S. Has-  
kell, Dallas, Tex.  
Swan Finch Oil Corp., 205 E. 42nd St., New  
York 17, N.Y.  
Sweet's Steel Co., 6000 Sweet St., Williamsport,  
Pa.  
Sweet Iron Works, A. L., 158 Glenwood Ave.,  
Medina, N.Y.  
Swift & Co., Technical Prod. Plant, 1800 165th  
St., Hammond, Ind.  
Symons Bros. Co., PO Box 770, No. Hollywood,  
Calif.  
SYNTRON CO., 166 LEXINGTON AVE.,  
HOMER CITY, PA. .... 197

## T

Talbot, H. L., Rm. 331, 84 State St., Boston 9,  
Mass.  
Talcott, Inc., W.O. & M.W., Box 1307, Provi-  
dence, R.I.  
Taller & Cooper, Inc., 75 Front St., Brooklyn  
1, N.Y.  
Tamping Bag Co., 218 E. Third St., Mt.  
Vernon, Ill.  
Taylor & Co., W.A., 7500 York Rd., Baltimore  
4, Md.  
Taylor Forge & Pipe Works, P. O. Box 488,  
Chicago 90, Ill.  
Taylor-Wharton Iron & Steel Co., High  
Bridges, N.J.  
Technical Assoc., 140 W. Providencia Ave.,  
Burbank, Calif.  
Telluride Iron Works Co., 400 Main Ave.,  
Durango, Colo.  
Tennant, C. Sons & Co., of N.Y., The Sink  
& Flood Div., 160 Park Ave., New York  
17, N.Y.  
Tennessee Prod. & Chem. Corp., First Amer.  
Nat. Bank Bldg., Nashville 2, Tenn.  
Terminal Radio Int'l. Ltd., 85 Cortland St., N.Y.  
7, N.Y.  
Texas Co., 125 E. 42nd St., New York 17,  
N.Y.  
Texas Instruments, Inc., 6000 Lemmon Ave.,  
Dallas, Texas.  
THERMOID CO., 200 WHITEHEAD RD.,  
TRENTON 6, N.J. .... 2  
Thew Shovel Co., Lorain, Ohio.  
Thomas Flexible Coupling Co., Main Ave. &  
Biddle St., Warren, Pa.  
Thomas Foundries, Inc., P. O. Box 1111 (3800)  
10th Ave. N) Birmingham, Ala.  
Thompson Balance Co., 802 E. 18th Ave., Den-  
ver 18, Colo.  
THOR POWER TOOL CO., 175 N. STATE  
ST., AURORA, ILL. .... WM 97  
(WORLD MINING ONLY)  
Three Point Belt Lacing, Inc., PO Box 359,  
Peace Dale, R.I.  
THROWAWAY BIT CORP., 4280 N.W. YEON  
AVE., PORTLAND 18, OREGON .... 24  
THUNE MEK. VARKSTED, A. S., OSLO,  
NORWAY ..... 22  
Tide Water Assoc. Oil Co., 17 Battery Place,  
New York 4, N.Y.  
TIMKEN ROLLER BEARING CO., 1235  
DUEBER AVE., S.W., CANTON, OHIO  
..... 237  
Titan Metal Mfg. Co., Bellefonte, Pa.  
Titeflex, Inc., 680 Freshinghouse Ave., Newark  
& N.J.  
Tolsted Scale Co., Toledo 1, Ohio.  
Too-Tex Corp., 247 Pearl St., N.W., Grand  
Rapids, Mich.  
Tool Steel Gear & Pinion Co., 211 Town-  
ship Ave., Cincinnati 16, Ohio.  
Torrington Co., Field St., Torrington, Conn.  
Torrison Balance Co., Chittos, N.J.  
Trahan Engineering Corp., 1814 E. 40th St.,  
Cleveland, Ohio.

Tractomotive Corp., County Line Rd., Deerfield, Ill.  
 Transport Trailers, Inc., 1200 Twelfth St., Cedar Rapids, Iowa  
 Transue-Williams, Alliance, Ohio  
**TRAYLOR ENGINEERING & MFG. CO., ALLENTOWN, PA.** ..... 213-220  
 Triangle Conduit & Cable Co., Inc., Jersey Ave., New Brunswick, N.J.  
 Trico Fuse Mfg. Co., 2948 N. 5th St., Milwaukee 12, Wis.  
 Trojan Powder Co., 17 N. 7th St., Allentown, Pa.  
 Trombetta Solenoid Corp., N. Milwaukee St., Milwaukee, Wis.  
 Truck Engr. Corp., 1225 W. 80th St., Cleveland 2, Ohio  
 Truscon Steel Div., Republic Steel Corp., Albert St., Youngstown 1, Ohio  
 Turner Brass Wks., Sycamore, Ill.  
 Tweco Prod. Co., P.O. Box 666, Wichita 1, Kansas  
 Twin Disc Clutch Co., 1229 Racine St., Racine, Wis.  
 Twinning Laboratories, 2527 Fresno St., Fresno, Calif.  
**TYLER CO., W. S. 3615 SUPERIOR AVE., CLEVELAND 14, OHIO** ..... 259  
 Tyson Bearing Corp., Oberlin Rd., Massillon, Ohio

## U

**UDY, MARVIN J., 546 PORTAGE ROAD, NIAGARA FALLS, N.Y.** ..... 123  
**ULTRA-VIOLET PRODUCERS, INC., 145 PASADENA AVE., S. PASADENA, CALIF.** ..... 84  
 Union Carbide & Carbon Corp., 80 E. 42nd St., New York 17, N.Y.  
 Union Carbide & Carbon Corp., Haynes Steelite Div., 725 S. Lindsay St., Kokomo, Ind.  
 Union Carbide & Carbon Corp., Linde Air Prod. Div., 30 E. 42nd St., New York 17, N.Y.  
 Union Chain & Mfg. Co., Edgewater Ave., Sandusky, Ohio  
 Union Iron Works, E. 217 Montgomery, Spokane, Wash.  
 Union Bag & Paper Corp., 222 Broadway, New York 7, N.Y.  
**UNION OIL CO. OF CALIF., 617 W. 7TH ST., LOS ANGELES 17, CALIF.** ..... 30  
 Union Wire Rope Corp., 21st & Manchester Ave., Kansas City 26, Mo.  
 United Grain & Shovel Corp., 6411 W. Burnham St., Milwaukee, Wis.  
 United Geophysical Corp., Box M, Pasadena, Calif.  
 United States Electric Mfg. Co., 222 W. 14th St., N.Y. 11, N.Y.  
 U S Electrical Motors, Inc., 290 E. Slanson Ave., Los Angeles 54, Calif.  
 United States Graphite Co., Saginaw, Mich.  
 U S Industries, Inc., 25 Broad St., New York, N.Y.  
 U S Instrument Corp., 409 Broad St., Summit, N.J.  
 U S Pipe & Foundry Co., 3300 1st Ave. North, Birmingham 2, Ala.  
 U S Rubber Co., 1250 Ave. Americas, New York 20, N.Y.  
 United States Rubber Intl., 161 E. 42nd St., N.Y. 17, N.Y.  
 U S Safety Service Co., 1215 McGee St., Kansas City, Mo.  
 U S Smelting Furnace Co., E "A" St. & I. & N Tracks, Belleville 11, Ill.  
**U. S. STEEL CORP., 525 WILLIAM PENN PLACE, PITTSBURGH 39, PA.**  
 INSIDE FRONT COVER (WORLD MINING ONLY)  
 U S Steel Corp., American Bridge Div., 525 Wm. Penn. Place, Pittsburgh 30, Pa.  
 U S Steel Corp., American Steel & Wire Div., Rockefeller Bldg., Cleveland 13, Ohio  
 U. S. Steel Corp., Columbia-Geneva Steel Div., Russ Bldg., San Francisco 6, Calif.  
 U. S. Steel Export Co., 39 Church St., New York 3, N.Y.  
 United States Steel Corp., Tennessee Coal & Iron Div., P.O. Box 559, Fairfield, Ala.  
**UNIVERSAL DREDGE MFG. CO., 124 WAZEE MARKET, DENVER 4, COLO.**  
 ..... WM 24 (WORLD MINING ONLY)  
 Universal Engineering Corp., 620 C Ave., N.W., Cedar Rapids, Iowa  
 Universal Motor Co., 422 Universal Drive, Oshkosh, Wis.  
 Universal Road Machinery Co., 27 Emerick St., Kingston, N.Y.  
 Universal Road Mach., R.M., Gray Div., 117 Liberty St., N.Y. 6, N.Y.  
**UNIVERSAL VIBRATING SCREEN CO., DEANE BLVD. & ST. PAUL RR, RACINE, WIS.** ..... 85  
 Universal Welder Corp., 2567 E. 79th St., Cleveland 4, Ohio  
 Upson-Walton Co., 12500 Elmwood Ave., Cleveland 11, Ohio  
 Uranium Engr. Co., 205 Colorado Ave., Grand Junction, Colo.  
 Uranium Enterprises, Fidelity Bldg., Spokane 1, Wash.

Uranium Exploration, P.O. Box 223, Norwood, Colo.  
 Utah Fire Clay Co., 1075 S. First West St., Salt Lake City, Utah  
 Utility Mine Equip. Co., 1010 Colling Wood Rd., St. Louis 24, Mo.

## V

**Vale de Rio Doce Trading Co., 63 Wall St., New York 5, N.Y.** ..... 69  
 Valve & Primer Corp., 326 W. Huron, Chicago 10, Ill.  
 Valvoline Oil Co., Division of Ashland Oil & Refining Co., Freedom, Pa.  
**VAN WATERS & ROGERS, INC., 4000-1 ST. SEATTLE 4, WASH.** ..... 123  
 Varel Mfg. Co., 9230 Denton Dr., Dallas, Texas  
 Vascology-Ramet Corp., 800 Market St., Waukegan, Ill.  
 Vickers, Inc., 1400 Oakman Blvd., Detroit 32, Mich.  
 Victaulic Co. of America, P. O. Box 509, Elizabeth, New Jersey  
 Victor Equipment Co., 844 Polson St., San Francisco 7, Calif.  
 Victoreen Instrument Co., 5806 Hough Ave., Cleveland 3, Ohio  
 Vilter Mfg. Co., 2217 S. First St., Milwaukee 7, Wis.  
 Vittrified Wheel Co., Box 446, Westfield, Mass.  
 Voland & Sons, Inc., P. O. Box 689, New Rochelle, N.Y.  
 Vulcan Electric Co., 58 Holten St., Danvers, Mass.  
 Vulcan Iron Works, 739 S. Main St., Wilkes-Barre, Pa.  
**VULCAN IRON WORKS, 1423 STOUT ST., DENVER, COLO.** ..... 10

## W

Wadsworth Electric Mfg. Co., Covington, Ky.  
 Wagner Electric Corp., 6400 Plymouth Ave., St. Louis 14, Mo.  
 Waldron Corp., John, P.O. Box 791, New Brunswick, N.J.  
 Wall Colmonoy Corp., 19345 John R., Detroit, Mich.  
 Wall Rope Wks., Inc., 48 South St., N.Y. 3, N.Y.  
**WALVOORD, INC. O. W., 300 DETROIT ST., DENVER 6, COLO.** ..... 123  
 Walworth Co., 60 E. 42nd St., N.Y. 17, N.Y.  
 Ward Leonard Electric Co., 115 MacQuisten Farway South, Mount Vernon, N.Y.  
 Warren-Knight Co., 136 N. 12 St., Philadelphia 7, Pa.  
 Warren Steam Pump Co., Inc., Warren, Mass.  
 Warsaw Power Tools, Inc., P. O. Box 166, Danbury, Conn.  
**WASATCH BALL FOUNDRY, INC., 531 W. 7TH SOUTH, SALT LAKE CITY 4, UTAH** ..... 85  
 Washington Iron Works, 1520 6th Ave. S., Seattle 4, Wash.  
 Washington Machinery Co., 7229 East Marginal Way, Seattle 5, Wash.  
 Watlow Electric Mfg. Co., 1576 Ferguson Ave., St. Louis 14, Mo.  
 Watt Car & Wheel Co., Harnesville, Ohio  
 Waukesha Motor Co., St. Paul Ave., Waukesha, Wis.  
 Waverly Oil Works Co., 4403 Centre Ave., Pittsburgh 13, Pa.  
 Webb Belting Co., 1501-1507 W. 12th St., Kansas City 1, Mo.  
 Webb Corp., Box 549, Webb City, Mo.  
 Webster Mfg., Inc., Tiffin, Ohio  
 Wedge Bar Screen Corp., 2006 Hayport Pl., Far Rockaway, N.Y.  
**WEDGE WIRE CORP., WELLINGTON, OHIO** ..... 270  
 Weidman Pump Mfg. Co., 290 Spruce St., Columbus 8, Ohio  
 Weir Kilby Corp., 5028 Beech St., Cincinnati 12, Ohio  
 Wellington Sears Co., Inc., 65 Worth St., N.Y. 13, N.Y.  
 Wellman Co., S.E., 200 Egbert Rd., Bedford, Ohio  
 Wellman Engineering Co., Cleveland 4, Ohio  
 Wenche Electric Co., 1622 Vine St., Cincinnati 10, Ohio  
 West Virginia Steel & Mfg. Co., Box 118 B, Huntington, W. Va.  
 Westeel Prod. Ltd., 1 Atlantic Ave., Toronto 8, Canada  
 Western Block Co., Lockport, New York  
 Western Foundry Co., 2400 S. W. Water Ave., Portland 1, Ore.  
 Western Gear Wks., P.O. Box 182, Lynwood, Calif.  
 Western Gear Works, 417-9th Ave., So., Seattle 4, Wash.  
 Western Gear Works, Pacific Gear Plant, 1035 Polson St., San Francisco, Calif.  
 Western Insulated Wire Co., 2425 E. 30th St., Los Angeles 28, Calif.  
 Western-Knap Engr. Co., 755 Polson St., San Francisco, Calif.  
**WESTERN MACHINERY CO., 755 POLSON ST., SAN FRANCISCO 7, CALIF.** ..... 13  
 Western Precipitation Corp., 1016 W. 9th St., Los Angeles 15, Calif.

**WESTERN ROC BIT MFG. CO., 532 WEST 7TH SOUTH ST., SALT LAKE CITY 4, UTAH** ..... 86  
**WESTINGHOUSE AIR BRAKE CO., CLEVELAND ROCK DRILL DIV., CLEVELAND, OHIO** ..... 4  
 Westinghouse Air Brake Co., Ind. Products Div., Wilmerding, Pa.  
 Westinghouse Air Brake Co., LeROI Div., 1706 S. 58 St., Milwaukee, Wis.  
 Westinghouse Electric Corp., P.O. Box 868, 3 Gateway Center Ave., Pittsburgh 30, Pa.  
 Westinghouse Electric Corp., W. 58th St., Cleveland 3, Ohio  
 Westinghouse Electric Corp., Lamp Div., Bloomfield, N.J.  
 Westinghouse Electric Corp., Sturtevant Div., Hyde Park, Boston 36, Mass.  
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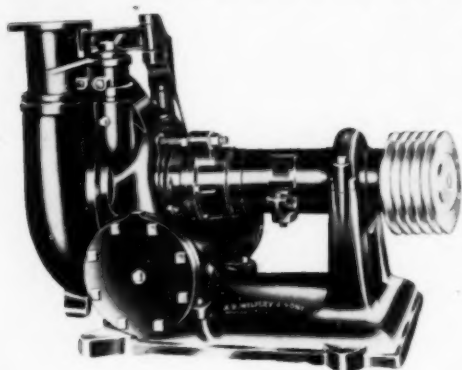
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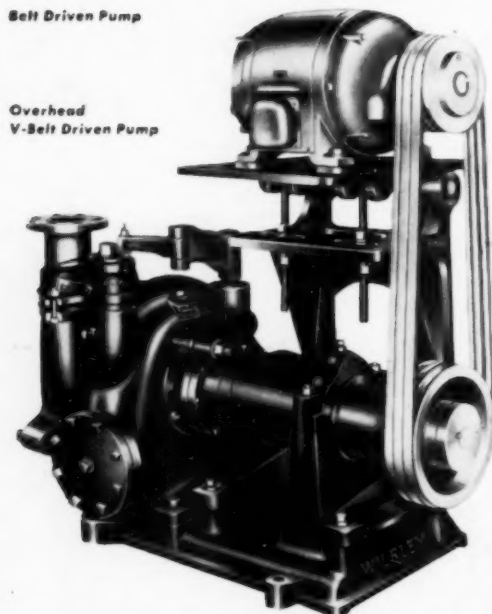
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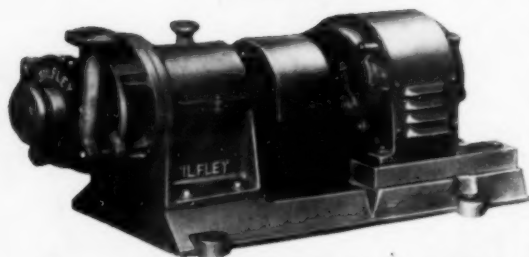
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